The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

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Contents

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Extending the Merger

THE announcement we were able to make last week of the acquisition by Imperial Chemical Industries of four more companies is no doubt the forerunner of similar announcements to be made from time to time. There had been expectations, encouraged in certain financial quarters, of important alliances with or absorptions of other large industrial concerns, and the meeting, we have reason to think, was being watched with a certain interest from the United States. For the present, however, the changes are of quite a modest order, and it was clear from the spirit as well as the actual terms of Sir Alfred Mond's speech that the present increase of capital is intended to enable comparatively small acquisitions to be made from time to time. That these will come there can be little doubt, and many a small company, with a good process or product, will probably find a home in Imperial Chemical Industries. Nor need they all be small. But whether small or big, they will leave the independent firms fewer, and the outlook of the latter does not become more cheerful or assured.

Of three of the new companies taken into Imperial Chemical Industries very little had been heard, nor had they been the subject of rumour or speculation. Perhaps the best known is the Cassel Cyanide Co., with which several well-known men, such as Sir Edward Brotherton and the late Sir George Beilby, have been associated, and the business of which is now confined mainly if not wholly to the manufacture of cyanide. Casebourne and Co. (1926), Ltd., dates from 1882. It owns cement works in the neighbourhood of Billingham-on-Tees, as well as chalk quarries in northern Yorkshire, and it is probable that its properties may be of value in connection with the synthetic nitrogen works. The firm of Oliver Wilkins, of Derby, is a comparatively small but successful pigment manufacturing company, the acquisition of which has not unnaturally caused a slight flutter among other firms of the same class. The Union Acid Co., Ltd., of Manchester, though not large, is understood to be a convenient addition to the I.C.I. From the point of view of the preference shareholders, who were formally convened to sanction the acquisitions, there would appear to be no reason for apprehension as to the effect on the existing shares.

The Chemistry of Cancer

THE address which Professor J. C. Drummond delivered this week before the London Section of the Society of Chemical Industry touched in a striking way on a number of important aspects of bio-chemistry. Of greatest interest, perhaps, was his account of the work of Warburg, the German bio-chemist, on the nature of cancer. The subject may seem somewhat remote from chemistry; in point of fact, however, this is not the case. It would appear from recent work that cancer cells have a considerable power of breaking down sugar, but the breakdown only succeeds as far as lactic acid; and this seems to be characteristic of tumours in general. It may be said that these cells show a fermentative rather than a respiratory action. Moreover, the cancer cell shows some relation to the embryonic cell, and probably cancer may be due to the inclusion of tracts of embryonic tissue (which may spring into activity) in ordinary tissue. The fermentative activity of cancer cells is so marked that if deprived of oxygen they live much longer than normal cells. It would seem, however, from Warburg's work that the malignant cells may be killed if they are also deprived of sugar. Warburg did, in fact, find that in certain animals, when these conditions were satisfied, tumour tissue died quickly.

The subject has been elaborated at some length because it shows how widespread are the applications of chemistry. It may be, of course, that we shall be once more disappointed, and that this work is not the beginning of a mastery of cancer. But, in any case, the work of Warburg deserves admiration for its bold and unhesitating application of the principles of pure science and pure chemistry to a very difficult field. It is vastly different in this respect from the manner

in which this and kindred problems have been attacked by others, whose efforts have often been nothing more than blind shots of the hit-or-miss variety.

Professor Drummond also raised the question of the training of bio-chemical research workers. The matter is urgent for a number of reasons. To start with, it grows more and more obvious that future advances in therapeutics will depend to a very large extent on the bio-chemist. The problems to be solved are numerous and pressing, and the prize is the greatest of all rewards—the health of mankind. Moreover, as Professor Drummond indicated, important industrial applications of bio-chemistry, such as the increased use of micro-organisms for industrial purposes, may be expected. It is satisfactory, at least to chemists, to hear Professor Drummond's round declaration that the bio-chemist must be primarily trained as a chemist ; though he must also be sufficiently trained as a biologist to be able to look at every problem stereoscopically—from the twin angles of chemistry and biology. Finally, bio-chemistry is to be regarded as a post-graduate study, in order that the chemist may not specialise too early.

It is a good omen for bio-chemical research in this country that one of its leading lights should keep clearly in mind the necessity for the proper organisation of the training of its workers. In this realm at least Great Britain has not lagged behind, for the work of Gowland Hopkins and others lies at the very root of many modern ideas. The advance of the bio-chemist is already so rapid that it seems not unlikely that in the next generation bio-chemistry may achieve for itself a triumph as great as that achieved in the last generation by the other great borderland subject, physical chemistry.

Chemicals at the B.I.F.

THE organisers of the British Industries Fair to be held at the White City, London, February 20 to March 2, may be congratulated on having issued an advance overseas edition of the catalogue more than six weeks before the opening date, so that it may be in the hands of trade buyers in Europe and America in sufficient time to enable them to visit the Fair after its receipt. Not only is it being issued to suitable buyers in countries which can be reached in sufficient time, but copies are being sent where possible to those buyers who have notified the Department of Overseas Trade of their intention to attend. Visitors from cities as distant as Johannesburg and Buenos Aires will receive their copies in time to study them on the voyage to England. Features of the advance edition are the alphabetical lists of exhibits in nine languages and the classified list of exhibitors which is coming to be used throughout the year by trade buyers abroad as a buyers' book of reference of British manufacturers. The London programme is supplemented by an advance list of firms who have taken space at the Birmingham Fair.

The exhibition of chemicals and allied products will, as usual, be included in the London Fair, and the Department will once again, we understand, have the valuable assistance of the Association of British Chemical Manufacturers in making the arrangements. Instead of occupying as in previous years the hall at the Shepherd's Bush entrance, the chemical exhibits will be grouped this year near the Wood Lane entrance (Sections K and L). The range and the number of exhibitors seem to us notably larger than usual. The chemical and allied section includes analytical and research chemicals, disinfectants, dyes and intermediates, fertilisers, heavy chemicals, insecticides, chemical plant, photographic chemicals, soaps, domestic chemical products, druggists' sundries, drugs, pharmaceutical and toilet preparations, perfumes, essences, and essential oils. In addition there are numerous sections into the products of which chemicals enter. Altogether the prospects appear to be unusually good.

A Second Pittsburg Conference

WE are interested to hear that Dr. Thomas Stockham Baker, President of the Carnegie Institute of Technology, Pittsburgh, U.S.A., expects to spend six weeks in Europe during February, March, and April of this year to organise plans for the second international conference on bituminous coal at Pittsburgh. The first conference, it will be remembered, was held in November, 1926, under the auspices of the Carnegie Institute, and was attended by 1,700 delegates and leading fuel scientists from thirteen different countries. The second conference, which will be held under the same auspices, is fixed for the week beginning November 19, 1928. President Baker's itinerary will include visits to scientists in most of the European countries, and his European address, after February 25, will be the Guaranty Trust Co., Paris.

In connection with the preliminary plans now being formulated by President Baker and his associates, a definite decision has already been made to include the subject of "Synthetic fertilisers from coal" in the programme for the second conference. Other subjects to be considered will probably include the latest developments in obtaining substitutes for gasoline from coal, power from coal, low and high temperature distillation processes, smokeless fuel, gasification of coal, utilisation of coal tar products, and coal in relation to the production of fixed nitrogen. Formal letters of invitation to be officially represented at the 1928 meeting have been sent to the ambassadors, ministers, and other representatives in Washington of the following countries:—Argentina, Belgium, Brazil, Chile, Cuba, France, Germany, Great Britain, Italy, Japan, Mexico, Peru, Spain, Austria, China, Czechoslovakia, Denmark, Greece, Hungary, Norway, Panama, Poland, Sweden, Switzerland, Netherland, and Roumania.

Concessions to Chemical Merchants

THE British Chemical and Dyestuffs Traders' Association announce a number of quite useful concessions to chemical merchants, which have been obtained by means of negotiation with the Customs authorities. The first relates to the arrangements which have been made for small packets containing *bona fide* trade samples of chemicals liable to Key Industry duty to be imported by sample post from places abroad, from January 16 next. The conditions, which are quite simple, include a Post Office fee of 6d. for clearance through the Customs. Members are advised to inform foreign firms of this new arrangement

and to request them to post samples of Key Industry duty products by sample post, marking the packet as decided. It may be pointed out that samples liable to the Dangerous Drugs Act or the Dyestuffs (Import Regulation) Act are not included in this arrangement.

Another useful piece of work is the cancellation of the Customs original claim to levy Key Industry duty on the full value of containers on loan and returnable, and also of the Customs ruling that importers must pay duty on the cost of returning such containers. It is now made clear that containers on loan are not liable to Key Industry duty nor is the cost of returning them. When importing dutiable goods in containers on loan, members are advised that their invoices should include a statement of the naked value of the material and a note that the containers (whether drums, cylinders, or bottles) are on loan and returnable. At times when the difficulties of the merchanting community are probably greater than they have ever been in the past concessions of this kind will be duly appreciated.

Paint and Varnish Standards

OUR attention has been drawn to the extremely valuable work that has been done in recent years in drawing up a series of British standard specifications for paints, varnishes, and painting materials applicable to Government departments, railway companies, municipal authorities, and other large users. In our next issue we hope to publish a more detailed statement on the subject. Meanwhile, it may be pointed out that the only handicap to such work is the limited supply of funds, and it is distinctly disappointing to hear that it is not yet certain whether the amount available will permit of the completion of the programme originally outlined for the paint and varnish section. It is surely only necessary to make this situation clear to ensure the raising of the comparatively modest sum needed to carry on this work, and the account we hope to publish next week should be sufficient to achieve this purpose.

In This Week's Issue

Books Received

THE THEORY OF EMULSIONS AND THEIR TECHNICAL TREATMENT. By Dr. William Clayton. London: J. and A. Churchill. Pp. 283. 15s.

LEHRBUCH DER ORGANISCHEN CHEMIE. By Dr. Paul Karrer. Leipzig: Georg Thieme. Pp. 884. 36 M.

RESEARCH IN THE COTTON INDUSTRY. Edited by Dr. R. H. Pickard. Manchester: The Shirley Institute, Didsbury. Pp. 80.

BRITISH INDUSTRIES FAIR, 1928, CATALOGUE. London: Department of Overseas Trade. Pp. 600. 1s.

The Calendar

1928 Jan.		
9	Institute of Metals (Scottish Section): Open Discussion. 7.30 p.m.	39, Elmbank Crescent, Glasgow.
9	Institute of Chemistry (Manchester Section): "Some Inter-relations of Chemistry and Physiology." Professor H. S. Raper.	Royal Exchange Buildings, St. Ann's Square, Manchester.
10	Institute of Metals (N.E. Coast Section): "Permanent Mould Casting in Aluminium Alloys." 7.30 p.m.	Armstrong College, Newcastle-on-Tyne.
10	Institution of Petroleum Technologists: "The Connection between Commercial Oil Deposits and Major Structural Features with Special Reference to Asiatic Fields." L. Dudley Stamp. 5.30 p.m.	Royal Society of Arts, John St., Adelphi, London.
10–12	Physical Society and Optical Society: Eighteenth Annual Exhibition.	Imperial College of Science.
11	Ceramic Society: "Dust Inhalation with special reference to Silicosis." Professor E. L. Collie.	North Staffordshire Technical College, Stoke-on-Trent.
11	Society of Chemical Industry (Nottingham Section), Joint Meeting with Society of Dyers and Colourists (Midlands Section): "Action of Acids on Wool." S. R. Trotman and Dr. E. R. Trotman. 7.30 p.m.	University College, Nottingham.
11	Institute of Fuel: "The Utilisation of Town's Refuse and Refuse Fuels." A. B. Scorer. 6 p.m.	Burlington House, Piccadilly, London.
12	Institute of Metals (London Section): "Segregation in Metals and Alloys." Dr. S. W. Smith. 7.30 p.m.	83, Pall Mall, London.
12	Oil and Colour Chemists' Association: "Some Points in the Manufacture of Zinc Oxide." R. G. Daniels.	8, St. Martin's Place, Trafalgar Square, London.
13	Chemical Engineering Group: "The Manufacture of Artificial Silk, with Special Reference to Viscose." H. R. S. Clotworthy. 8 p.m.	Burlington House, Piccadilly, London.
16	University of Birmingham Chemical Society: Presidential Address by Professor W. N. Haworth.	University, Birmingham.
16	Chemical Industry Club: "The City Churches." Joseph Hill. 8 p.m.	2, Whitehall Court, London.
17	Society of Chemical Industry (Glasgow Section): "The Fuel Problem." Dr. C. H. Lander. 7 p.m.	39, Elmbank Crescent, Glasgow.
18	Society of Glass Technology: 2.30 p.m.	Manchester.
18	Institute of Metals (Swansea Section): "Some Interesting Properties of Alloys of Nickel." W. T. Griffiths. 7 p.m.	Thomas Café, High Street, Swansea.
19	Optical Society: Ordinary Meeting. 7.30 p.m.	Imperial College of Science.
19	Chemical Society: 8 p.m.	Burlington House.
19	Institute of Chemistry and Society of Chemical Industry (Edinburgh Sections): Discussion on "The Separation of Solids and Fluids." 7.30 p.m.	North British Station Hotel, Edinburgh.
19	Institute of Metals (Birmingham Section): "Heat Resisting Alloys." T. H. Turner. 7 p.m.	Engineers' Club, Waterloo Street, Birmingham.
20	Society of Dyers and Colourists (Scottish Section): Dr. H. Levinstein.	Glasgow.
20	Society of Chemical Industry (Liverpool Section): "The Production and Refining of Cane Sugar." Geoffrey Fairrie. 6 p.m.	University, Liverpool.
20	West Cumberland Society of Chemists and Engineers: "The Lubrication of the Automobile." O. T. Jones. 7 p.m.	Workington.
20	Society of Dyers and Colourists (West Riding Section): Annual Dance.	Queen's Hall, Bradford.
20	Society of Dyers and Colourists (Manchester Section), Joint Meeting with the Manchester Section of the Oil and Colour Chemists' Association: "Azoic and Other Insoluble Colours." Dr. A. E. Everest and J. A. Wallwork.	Milton Hall, Deansgate, Manchester.

The Caking of Sulphate of Ammonia

By W. G. Adam

These notes on the caking of sulphate of ammonia deal with a problem of very considerable interest to manufacturers, whether of by-product sulphate or of the synthetic product. The author has had considerable experience in this field as superintendent of the Gas Light and Coke Co.'s Tar and Ammonia Products Works at Beckton, London.

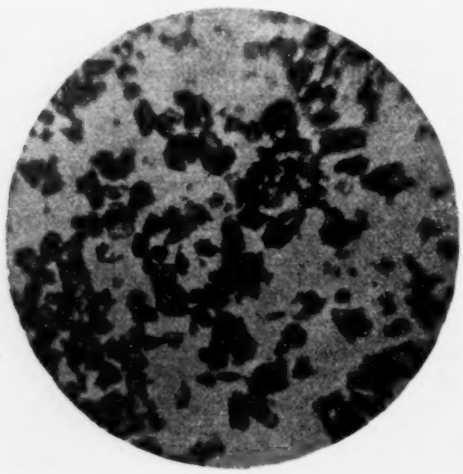
In the days of grey acid sulphate of ammonia, the problem that confronted the exporters at first was that, when it reached its destination, the bags in which it was packed were found to be so rotted by the acid in the sulphate that they fell to pieces on attempting to lift them from the holds.

This led to the adoption of the practice of double bagging for export, which added considerably to the expense. Shippers, therefore, naturally hailed with delight the advent of neutral sulphate, in that henceforth single bags would suffice and the cost of bagging would be practically halved. Their enthusiasm was but short-lived, for another trouble disclosed itself. The bags of sulphate arrived intact, but the salt was caked in a cement-like form that required sledge hammers to reduce the sulphate again to a form easily distributable on the soil.

Various theories were advanced to account for this, but it was not until the British Sulphate of Ammonia Federation appointed a committee to investigate the matter that makers of dry neutral sulphate of ammonia were able to overcome this difficulty.

A large amount of the work which this investigation necessitated was carried through by the Gas Light and Coke Co. at their Products Works, Beckton, and the results made available to this committee, the subsequent recommendations of the Sulphate of Ammonia Federation being based on the information thus obtained.

These recommendations have been faithfully carried out by several large makers, and the product shipped abroad by these makers has given no trouble with caking.



SYNTHETIC G.

BECKTON ORDINARY.

BECKTON SPECIAL.

SYNTHETIC B.

The Cause of Caking

The work carried out at Beckton prior to June, 1925, showed that the caking was mainly due to loss of moisture, but it was also considered that the size and form of the crystal and probably other factors might have a bearing on the problem.

It was shown that caking was caused by small crystals being formed when the moisture was evaporated. The moisture is present as a saturated solution of sulphate of ammonia, and any subsequent drying causes the binding

together of the large crystals by the formation of small crystals around the points of contact.

It, therefore, seemed probable that if a method could be devised for determining the area of contact in a particular make of sulphate of ammonia, it would give us a measure of the caking tendency of that particular make. One would expect that the larger the area of contact the greater would be the tendency to cake, and *vice versa*. It appeared that by measuring the free space, or voids, between the crystals, a value bearing some definite relation to the area of contact would be obtained.

Determination of Voids

Several methods of determining the voids were tried, the one finally adopted being as follows :—

A standard 100 cc. cylinder was filled to the mark with the sample under examination and paraffin slowly run, from a standard burette, into this cylinder containing the sulphate until the 100 cc. mark was reached ; the quantity of paraffin used gave at once the percentage of voids. It was found that the figure thus obtained agreed very closely with that calculated by determination of the apparent and real specific gravities.

The determination of voids and the grading of various makes of sulphate of ammonia gave the following results :—

Make.	Voids. Per cent.	Grading.			
		+40	−40 +60	−60 +100	−100
Beckton Special large	61.2	96.3	3.0	0.5	0.2
Beckton Ordinary Stock	53.5	6.4	54.0	35.2	4.4
Gasworks M..	51.9	22.6	54.6	22.4	0.4
Coke Oven Works B	50.7	0.6	27.6	64.5	7.3
Coke Oven Works A	50.0	28.3	58.0	12.5	1.2
Synthetic G	43.5	76.0	20.1	3.6	0.2
Synthetic B	43.0	80.0	18.6	1.4	Nil
By evaporation of Sulphate of Ammonia Solution S	42.0	91.7	7.4	0.9	Nil.
Gasworks S	41.0	56.5	39.0	4.5	Nil.
Sulphate finely ground in a mortar ..	39.5	Nil.	Nil.	Nil.	100
By evaporation of Sulphate of Ammonia Solution B	36.5	56.9	33.0	9.5	0.6

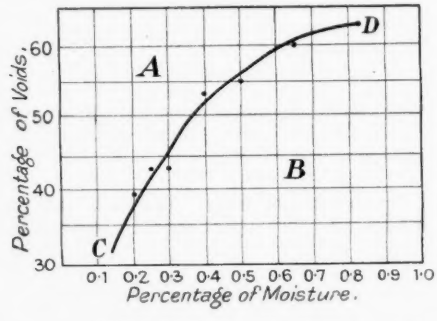
It will be noted from this table that there is no relationship between the grading and the percentage of voids.

In order further to test the theory that the caking tendency was largely dependent on the percentage of voids, the following method of testing the liability of the sulphate to cake was used :—

Small canvas bags, 2 in. by $4\frac{3}{4}$ in. inside measurements, and holding about 60 grams of sulphate of ammonia were pressed between iron plates bolted together while being dried at 100° C.

A sample of sulphate of ammonia having 60 per cent. voids was taken and subjected to the above treatment with slightly increasing percentages of moisture until the sample definitely caked. This was found to occur when the percentage of moisture was 0·65 or above ; below this percentage no caking occurred.

This process was repeated with other makes of ammonium sulphate, the results being illustrated by the following curve :—



When the conditions lie within the Area A, that is, above the line CD, the crystals of sulphate of ammonia will not cake, but with conditions coming within the area B, the product will cake, the line CD representing the points at which caking actually occurred.

The results obtained showed that immunity from caking is not guaranteed by the production of a large crystal, neither is trouble to be anticipated purely on the grounds of the crystal produced being small, but that the percentage of voids, on which the size and grading of the crystal have practically no bearing, is a true indication of the "cakeability" of the sulphate of ammonia.

As the percentage of voids depended largely on the shape of the crystal, makers should aim at producing the long needle form which gave the greatest percentage of voids.

The large crystals, formed by the evaporation of sulphate solutions, such as are used in the manufacture of the synthetic product, have a low percentage of voids and evidently fit closely together, giving, therefore, a sulphate which cakes readily. These synthetic crystals are in the form of short hexagonal prisms, the length of which is practically equal to the diameter, whereas the sulphate of ammonia of good quality made in a saturator by the ordinary means from gas liquor has a length equal to from 8 to 10 times its diameter. This point is well shown by the microphotographs on the opposite page, the magnification being equal, about 25 diameters, in each case.

The reason for the greater percentage of voids in the needle crystals is thus fairly easily accounted for. In the case of the short, almost cubical type, the crystals mass together quite closely without deliberate arrangement, whereas the long crystal would only fit closely when arranged in an orderly manner after the style of matches in a box.

It will thus be seen that the recommendations of the Sulphate of Ammonia Federation that the moisture content should not exceed 0·2 per cent. is fully justified by the curve, which shows this value to be within the safety limits for the present day makes of sulphate.

Scientists in the Honours List

THE New Year Honours List contains the following names of scientific interest :

A knighthood for Brigadier-General H. B. Hartley, F.R.S., fellow and tutor of Balliol College, Oxford, for services to the Army in connection with training Army candidates at Oxford. Brigadier-General Hartley is a member of the Chemical Warfare Committee. He was prominent in the army chemical advisory service during the war, was Controller of the Chemical Warfare Department of the Ministry of Munitions, 1918–19, and has published numerous papers in scientific journals.

A knighthood for Mr. E. H. Pascoe, Director of the Geological Survey of India.

A knighthood for Dr. T. E. Stanton, F.R.S., superintendent of the engineering department of the National Physical Laboratory.

A K.C.V.O. for Sir Frank Baines, late Director of Works to H.M. Office of Works, and now adviser on structural matters to Imperial Chemical Industries, Ltd.

A C.M.G. for Mr. A. F. Ellis, New Zealand member of the British Phosphate Commission.

New President of American Chemical Society

THE election is announced as president of the American Chemical Society for 1928 of Professor Samuel Wilson Parr, Professor-emeritus of Industrial Chemistry in the University of Illinois, and internationally known for his researches in coal chemistry. Professor Parr, who succeeds Dr. George D. Rosengarten, of Philadelphia, was born in Granville, Putnam County, Ill., in 1857, and graduated from the University of Illinois in 1884 with the degree of B.S. In 1885 he received the M.S. from Cornell, and later studied at the University of Berlin and at the Polytechnikum in Zurich. He has been a professor in the University of Illinois since 1891. He was a formerly a director of the Illinois State Water Survey, and since 1905 has been consulting chemist on coal investigation in the Illinois State Geological Survey.

Opposition to the Rubber Research Bill

THE Rubber Research Bill has received opposition from a group of rubber users who are apprehensive that trade secrets will be exposed by the system of collecting contributions on a fixed basis per lb. weight of rubber retained for use in Great Britain. The chairman of the Research Association of British Rubber and Tyre Manufacturers has pointed out that steps would be taken to ensure absolute secrecy with regard to the amount of rubber used by any firm of manufacturers.

Medicinal and Allied Chemicals in 1927

By Dr. G. Malcolm Dyson

During the year 1927, while no dramatic discoveries were made in the field of therapeutic chemistry and allied fields, steady progress was made, especially in regard to the preparation of synthetic insulin substitutes, anti-malaria compounds, and substances for protection against insect pests, moulds, etc. These subjects are dealt with in the following article.

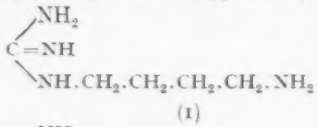
It may be stated, at the outset, that the year 1927 has proved better than its immediate predecessor with regard to the actual amount of trade handled, but seems in retrospect to have been somewhat less productive when considered from the standpoint of fundamental research. This may, possibly, be due to the fact that 1926 was an exceptional year in that it saw the synthesis of thyroxin and its introduction as a synthetic into general practice, or to the fact that the bulk of published research in chemotherapy was, in 1927, of academic rather than industrial interest.

Among the more interesting problems which have been cleared up during the past year is that of the nature and action of "Synthalin," a synthetic substance which has been advocated as a substitute for insulin. Obviously, any substance, which could be administered *per os*, and which would when so administered effect the same regulation of carbohydrate metabolism as does the injection of insulin, would immediately step into the front rank of therapeutic substances. It must, however, be shown that the substance is comparatively non-toxic before it is of any commercial value, and it is precisely upon this point that opinions were divided concerning "Synthalin."

It had been known for some time that the various derivatives of guanidine had the property of decreasing the blood sugar percentage, when administered either by injection or *per os*; indeed, Collip had suggested that insulin might be a derivative of guanidine, on account of the similarity of the convulsions which attend the use of an overdose of either.

Insulin-like Activity of Guanidine Derivatives

Further work on the insulin-like activity of guanidine derivatives was commenced by Professor Frank and his two colleagues, Messrs. Nothman and Wagner, and in an address at the Congress of Biology in 1926 the results of this research were partially made public. It appears that work was started



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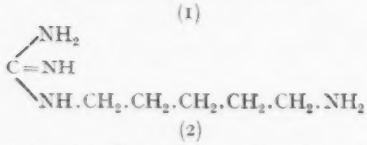
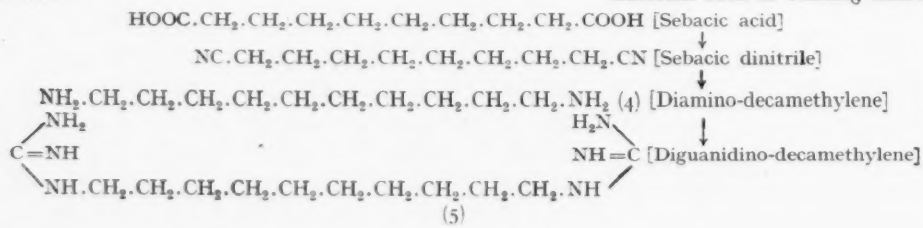


(2)

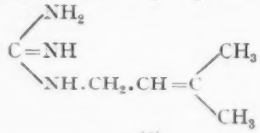
upon agmantine (1) which is aminobutylguanidine, and it was found that this substance was possessed of a very strong insulin-like activity, which latter property was even more strongly developed in aminopentylguanidine (2). Both these substances are, however, too toxic for use, and the investigators announced that a substance similar in type had been evolved which transcended all compounds hitherto synthesised in its insulin-like properties. This compound, they claimed, could be used with safety to replace insulin, but its exact constitution was not divulged. It has since been shown to be diguanidinodecamethylene and may be easily synthesised from sebacic acid, by conversion into the nitrile, reduction to the corresponding diaminodecamethylene (4) and conversion to the diguanido compound by boiling with cyanimide :—



(5)

The question as to whether "Synthalin" can effectively replace insulin in the treatment of diabetes has not yet been settled; but it appears that complete replacement with this drug is very unlikely. The inventors themselves draw attention to its obvious toxicity, and to the fact that some patients appear to be particularly sensitive to its use. The most important aspect of the whole matter is that it gives guiding lines to further research on these compounds; research from which will ultimately spring an efficient substitute for insulin which can be taken by mouth, and from which we may, possibly, be able to synthesise insulin itself.

An interesting sidelight upon this line of research is the recent work of German investigators who have shown that galegin (the alkaloid from *Galega Officinalis*) (6) has an effect

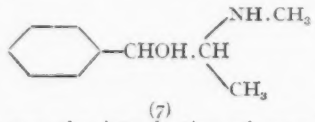


(6)

very similar to that of "Synthalin." It is claimed that up to 20 or 30 units of insulin per day may be replaced by galegin. The validity of this claim has yet to be established.

Ephedrine

The past year has seen the establishment in practical use of the new alkaloid ephedrine. This compound, obtained from the Chinese plant Ma Huang, where it occurs together with pseudoephredine, was current in very early Chinese medicine, but until quite recently it occupied no place in modern therapeutics. Its action is similar to that of adrenaline, and it is therefore of particular value in the treatment of asthma, more especially since its action appears to be equally exerted whether the administration is by mouth or by injection. Chemically ephedrine is α-phenyl-β-methylaminopropanol (7).



(7)

Each year sees the introduction of numerous arsenical and bismuth-containing remedies for the treatment of infective diseases such as syphilis and trypanosomiasis, but none of those introduced throughout 1927 call for any particular comment; so far, the discovery of the ideal non-toxic anti-syphilitic remedy remains for the future, and it cannot be said that 1927 has brought us much nearer to its synthesis. A case of more than passing interest is that of "Plasmochin," the new synthetic remedial substance for malaria, which has been stated to be sixty times as efficient as quinine. The fact that it produces toxic symptoms in certain cases is, of course, against it, but it is interesting as being almost the only example of a synthetic anti-malarial remedy.

Protection of Timber, Textiles, Etc.

In other branches of the so-called industrial fine chemical industries, it is encouraging to notice that increasing attention is being given to the prevention of damage to organic materials such as building timber and textiles by the attack of insects or micro-organisms. In America, the Western Union Company have experimented with various chlorinated hydrocarbons and phenols, and have established the fact that these substances, especially the chloro- and dichloro-xylenols, are

very considerably superior to creosote oils in the protection of timber from fungal organisms. In this country research has proceeded on similar lines, and the British Dyestuffs Corporation has patented the use of trichlorophenol and similar substances for the prevention of damage to fabrics by the organisms of mildew. Thick, water-soluble syrups containing these halogenated phenols are prepared for use in the textile industries, where they may be incorporated with sizes, etc., for obtaining mildew-proof goods.

Progress, too, has been made in the moth-proofing of textiles by chemists of the Mellon Institute. The question of proofing textiles against the attack of the so-called clothes moth has always been an acute one, and various organic substances such as naphthalene crystals and paradichlorobenzene have been proposed to combat this pest, which they do with only a very mediocre success. Recently, L. E. Jackson and H. E. Wassell have shown that the cinchona group of alkaloids are extremely effective in the moth-proofing of wool, and also that the conversion of such bases into their fatty acid salts increases the activity in this direction. The activity increases with the length of the carbon chain of the fatty acid used until undecylenic acid is reached. These fatty acid salts have the added advantage of being soluble in the various forms of naphtha used in dry-cleaning, so that moth-proofing and cleaning can be combined in one operation.

Against the eggs of the red spider, of moths, and of other agricultural pests, it has recently been found that 3:5-dinitrocresol in the form of its sodium salt is an efficient remedy. It has the advantage of ready solubility in water and of the fact that it is effective at a dilution varying between 1 in 1,000 and 1 in 4,000. Various field experiments with such stock as blackcurrants and apples have shown that a winter spraying of a 1 in 500 solution of the sodium salts effectively kills the eggs of *Aphis* and *Psylla* and reduces the number of caterpillars.

Dyestuffs Licenses for December

THE following statement relating to applications for licences under the Dyestuffs (Import Regulation) Act, 1920, made during December, has been furnished to the Board of Trade by the Dyestuffs Advisory Licensing Committee. The total number of applications received during the month was 511, of which 431 were from merchants or importers. To these should be added 30 cases outstanding on November 30, making a total for the month of 541. These were dealt with as follows:—Granted, 485 (of which 450 were dealt with within 7 days of receipt); referred to British makers of similar products, 39 (of which 30 were dealt with within 7 days of receipt); outstanding on December 31, 17. Of the total of 541 applications received, 480, or 89 per cent., were dealt with within 7 days of receipt.

Inquest on German Chemist

MR. INGLEBY ODDIE, at Westminster, on Tuesday, held an inquest on Gustav Rothe, aged 66, a German chemist, of Frankfurt-on-Main, who died on Saturday, December 30, at the Strand Palace Hotel, where he had been staying. He had been working on a treatment for diabetes, which consisted in doses of hydrochloric acid and guiacol. Dr. Weir, pathologist, said that death was due to heart disease. The coroner said that from the medical point of view Rothe was quite an ignorant man, although from the chemical side he was fairly well educated. He did not think Rothe died through taking his own remedies, but from the condition of his heart, and he therefore recorded a verdict of death from natural causes.

Two Chemists Injured in Paint Works

Two chemists, Mr. Frank Walker, 21, of Glenny Road, Barking, and Mr. Frank Holmes, 20, of Southborough Road, Hackney, were injured at the paint work of Lewis Berger and Sons, Homerton, London, on Tuesday, when an oil bath in the chemical laboratory at the works became ignited. In extinguishing the flames the two men were burned on the hands and face. They were taken to Hackney Hospital for treatment. The fire, which was confined to the oil bath, was soon extinguished.

Sir Ernest Benn's Silver Wedding

A Bouverie House Presentation

SIR ERNEST and Lady Benn celebrated their silver wedding on Tuesday, January 3, and on the afternoon of that day the directors and staffs of Benn Brothers, Ltd., and its associated companies assembled in the Reception Room at Bouverie House to offer their congratulations. Mr. Gordon Robbins (Deputy Chairman of Benn Brothers) presided over this informal gathering, which included Elizabeth Lady Benn and Captain Wedgwood Benn, and Mr. F. E. Hamer, on behalf of the Social Circle, presented Sir Ernest and Lady Benn with an illuminated address, bound in morocco, and signed by 255 members of the Bouverie House staff. The address, which was designed and beautifully executed by Waterlow and Sons, Ltd., was in the following terms:—

"TO SIR ERNEST AND LADY BENN:

"On the day of your Silver Wedding the staff of Bouverie House ask you to accept their affectionate congratulations.

"These 25 years will remain the most memorable in your lives. As Sir John and Lady Benn were privileged to see their sons and daughters grow up around them to take responsible positions in life and to carry on the family tradition, so are you similarly blessed with the prospect, already, indeed, in course of fulfilment, of seeing your name and work maintained and enhanced by your children. What better prayer can we offer than that the happiness which has come to you in the past may be yours in even fuller measure in the future?

"To Benn Brothers, Ltd., and its associated companies the period that this address commemorates has been no less memorable. Under your leadership and inspiration the firm has made continuous progress, the benefits of which the staff have shared with yourselves. We rejoice that the happy personal relationship which marked the early days of the business survives unweakened at the end of this period of unexampled expansion.

"Not only as employees but as colleagues and friends in a great fellowship of work, in which individual effort has been happily reconciled with central control, we offer to you, to your family, and to the business that bears your name, our best wishes for the future.

"That you may be spared to celebrate your Golden Wedding in circumstances of even riper fulfilment is the hope of all whose names appear in this volume."

A Fellowship of Work

Sir Ernest Benn, in returning thanks, said that he was a little overwhelmed by this quite unexpected presentation and its beautiful form. The address not only embodied all those charming feelings of friendship and comradeship which were so precious to them and of which they were so proud, but it also conveyed them with a literary quality worthy of the best of the genius of Bouverie House. During the five and twenty years which they had spent together in business, and which his wife and himself had also spent together, the remarkable history had been worked out of their progress from Finsbury Square to Bouverie House, a story founded on a fellowship of work, laid down by his father, who, perhaps, knew better than any man of his time how to create and maintain that atmosphere. They had tried to follow in his footsteps. When one had had a certain amount of success, it was appropriate that it should be mentioned on a Silver Wedding day, because none of them could be blind to the fact that his dear partner had had a very large share in that success. (Applause.) They had been blessed in every way, in business and in health, and they had been specially blessed in their family. It was a record for which they were devoutly grateful, although 25 years might seem to young people a long time, and might even appear as an early edition of the funeral service, they did not look at it in that way at all; they were just starting up again. (Applause.)

Lady Benn, in a charming little speech, added her own thanks for the address and the spirit which had prompted it.

Export Credits New Quarters

OWING TO THE RAPIDLY INCREASING use which is being made of the facilities provided by the Government under the Export Credits Guarantee Scheme for the assistance of those engaged in export trade, the Export Credits Guarantee Department has secured larger and more suitable accommodation at 9, Clements Lane, Lombard Street, London, E.C.4; telephone number, Royal 8771.

The Future of Bio-chemical Research

Professor Drummond's Address to the Society of Chemical Industry

At a meeting of the London Section of the Society of Industrial Chemistry on Monday, Dr. J. C. Drummond gave a striking address on bio-chemical research, in which he made some very interesting remarks on the chemical basis of cancer. At the same meeting, a presentation was made to Dr. G. W. Monier-Williams.

MR. W. J. A. BUTTERFIELD presided at a meeting of the London Section of the Society of Chemical Industry held at Burlington House, Piccadilly, on Monday. Before the formal business of the meeting, a presentation was made to Dr. G. W. Monier-Williams, who a short time ago resigned from the honorary secretaryship of the section.

Presentation to Dr. Monier-Williams

The chairman, in presenting to Dr. Monier-Williams a clock made by Messrs. Dent, and an album containing the names of all those who had subscribed to the presentation, said that these were intended as an expression of gratitude on the part of the members for the ability and zeal with which Dr. Monier-Williams had conducted the business of the Section for seven very strenuous years. More than 250 members had joined in making this presentation. Dr. Bernard Dyer said that although he was not the immediate past-chairman of the Section he was the last chairman but one, and it gave him the greatest possible pleasure to pay his personal tribute to the work which Dr. Monier-Williams had done in the interests of the London Section.

The chairman then handed the clock and album to Dr. Monier-Williams amid loud applause. Dr. Monier-Williams, in acknowledging the presentation, said that it came as a complete surprise to him when he heard that all the arrangements for making it had been completed. Had he been consulted in the first instance, he should have said that his work as hon. secretary had been more than repaid by the extreme interest of the work and the cordial co-operation that he had received from successive chairmen, members of the committee, and members of the section.

Dr. Drummond's Address

Dr. J. C. Drummond then gave an address on "The Future of Bio-chemical Research," in which he indicated some directions in which investigations are taking place at the present time and laid stress upon the need for special training for bio-chemical investigators. The immediate future of chemical research, and particularly fundamental research, he said, lay along two very important lines. On the one hand there was the study of the ultimate constitution of matter, and on the other there was the chemical study of the phenomena of life. As regards the latter it was impossible to foresee to any extent at all the actual paths along which progress would be made even in the immediate future, but in order that progress in the field of bio-chemical research should be made, it was essential that there should be available the right type of man to prosecute the work, and he therefore stressed the importance of training men to undertake bio-chemical investigations.

The history of bio-chemistry showed that although the earlier chemists, 100 years or less back, frequently investigated the phenomena and reactions occurring in the living animal and plant, bio-chemistry as a more or less clear-cut branch of chemical science was not established until about 1900, and it was not until 1905 that the three large bio-chemical journals in England, America and Germany were founded and most of the bio-chemical societies came into being. Before that time there were those who were termed plant chemists, animal chemists, and occasionally fermentation chemists; and that perhaps was a natural subdivision, because in the ordinary progress of scientific research at that time pure chemistry was not very sympathetic towards biological problems. In saying this, however, he did not refer to such organic chemists as Emil Fischer, whose work laid the foundation for a great deal of bio-chemical research. The change, however, which was brought about from 1900, was reflected a little later by the establishment in certain places of departments of bio-chemistry. We in this country could pride ourselves on having a broad appreciation of what was understood by bio-chemistry.

It was important to grasp the essentials required in the training of men who had to conduct researches in this field. It was fundamentally necessary that primarily the training of such workers should be chemical, because a large amount of work which had been found to be faulty had been carried out by those whose chemical training was inadequate. At the same time it was not sufficient for the training to stop short at chemistry, because research workers in this field must also have some biological training, so that they could obtain what might be called a stereoscopic vision of the problem to be tackled; they would fail if they were pure chemists without any biological point of view, just as they would fail if they were biologists without any chemical training.

As regards the present outlook of bio-chemical research, Professor Drummond said that it was now usual to study the problems of life in the simplest possible systems, and there was a rapid growth of work on unicellular plants and organisms. If the right men were available, great work could be done in the field of micro-organisms. Unfortunately, there were few centres in this country in which men could receive training for that work. There was a great future for the industrial application of the activity of micro-organisms.

Evidence had recently been provided that the breakdown of sugar by yeast was like the combustion of sugar in the mammalian muscle and like the oxidation of sugar in the plant, and the processes were probably related to one another. This work had arisen out of Meyerhof's elaboration of Pasteur's theory.

Recent Work on Cancer

Some striking work on the bio-chemical basis of cancer had recently been done by Warburg in Germany. Cancer cells did not respire so actively as normal cells. They had a great power of breaking down sugar, but they only broke it down as far as lactic acid, and this was true of tumours in general. Normal tissue burned nearly all its sugar to carbon dioxide. Cancer and tumour tissue had a lower rate of change of sugar to carbon dioxide, but a very high rate of conversion of sugar to lactic acid, *e.g.*, they showed a fermentative rather than respiratory action. As regards the origin of cancerous tissue, there was no hard and fast line between normal and cancerous cells. The cancer cell showed a relation to the simple undifferentiated embryonic cell.

By his special methods, Warburg found that the behaviour of the embryonic cell was nearer in behaviour to malignant than to normal cells. Cancer might therefore possibly be due to the occlusion of tracts of embryonic tissue in ordinary tissue, and this embryonic tissue might spring into activity. In an organ tending to a cancerous condition there were cells tending to act fermentatively rather than in a respiratory manner when they were starved of oxygen. If these hypotheses were correct, a cure for cancer could be suggested on the following lines. The fermentative activity of cancer cells was known to be so marked that if deprived of oxygen they lived much longer than normal tissue, because they adopted the fermentative mode of life. If the cancer cell were to be killed, it must therefore also be deprived of sugar. Warburg had carried out experiments directed by these ideas, and he found that under the conditions suggested, in certain animals, tumour tissue died quickly.

The questions hitherto dealt with in his lecture, said Professor Drummond, showed that work on the activity of yeast, the working of the mammalian muscle, and the basis of cancer had much in common. The professor then proceeded to deal with the question of the specificity of proteins, and pointed out that the work of Dakin indicated that the arrangement of the acids in the protein-molecule might be the basis of the specificity. As regards chromosomes, the material of chromosomes was a compound of proteins and nucleic acids. The nucleic acids were not specific, but with the proteins there was always associated the question of specificity. Hence, possibly the characteristics which were transmitted by the chromosomes might be due to the specificity of the proteins. Hæmoglobins also showed specificity, and possibly the important point in a species with regard to its hæmoglobin was the type of protein to which the iron in the latter was combined.

Synthetic Resins

Paper before the Institution of Rubber Industry

A GENERAL review of the manufacture, uses, and properties of synthetic resins was given by Mr. A. A. Drummond (of the Chemical Research Laboratory, Teddington), at a meeting of the London section of the Institution of the Rubber Industry at the Engineers' Club, London, on Monday evening. As the number of synthetic resins was legion, he proposed to confine himself to such as were beginning to take a place in industry, the more important of which were made from formaldehyde and phenol or cresol; formaldehyde and thiourea or urea; modified phenolic resins; acrolein resins; resins from glycerol and phthalic anhydride and resins from hydrocarbons. There was no resin to-day to which a definite basic composition could be assigned and classification could only be roughly made according to materials used in manufacture and methods of preparation.

There were two main classes of reaction, one or other or both of which were concerned in the preparation of the resins. (1) Condensation, consisting in the union of two or more molecules of a chemical product, water being split off; (2) polymerisation or the mutual combination of molecules of the same substance.

Physical Properties

A more obvious means than the chemical one of specifying resins was of classifying their various applications. Their reaction to heat afforded distinctions to be drawn between various resins. The effect of heat on some resins was to diminish their solubility and to increase their inertness to chemical action. Such resins were referred to as heat-hardening resins, and were represented by the Bakelite phenolic resin and by urea, thiourea, and glyptal resins. The resins which, even after long heating, retained their fusibility and their solubility in organic solvents, formed the second class, and were represented by shellac substitute type of phenolic resin, resins from hydrocarbons, and polymerised coumarones and indenes. Most synthetic resins divided themselves into: (1) those soluble in polar solvents (of the alcohol type), and (2) those soluble in non-polar solvents (of the benzene type).

Industrial Applications and Electrical Properties

One of the largest fields of application of synthetic resins was in the production of moulding compositions in combination with a filler such as wood meal, asbestos and China Clay, which improved the strength, machining capabilities, heat resistance, and appearance. The speaker then gave details of the making of impregnated paper and fibre material such as paxolin. Following this he turned to a consideration of the electrical characteristics of the material. The dielectric strength of ebonite of average quality was 400 volts/mil. According to Monkhouse an average strength for Bakelite was 80-200 volts/mil., but values of 650 volts/mil. were indicated by the Damard Lacquer Co., and in laboratory work with special material a strength of 1,000 volts/mil. had been recorded.

Appointments Vacant

A Teacher of Rubber Technology at the Northern Polytechnic, Holloway, London, N.7.—The Clerk.

Established Analytical Chemist in the Inspection Department of the Royal Naval Cordite Factory, Holton Heath (Scientific Research and Experimental Department, Admiralty).—The Secretary to the Admiralty (C.E. Branch), Whitehall, London, S.W.1. January 16.

Two Chemists for the Agricultural Department of Nigeria, primarily for work on vegetable oils and nuts.—The Private Secretary (Appointments), Colonial Office, 2, Richmond Terrace, Whitehall, London, S.W.1. January 31.

An Assistant Lecturer in Agricultural Chemistry at the East Anglian Institute of Agriculture, Chelmsford.—J. H. Goold, Clerk of the Essex County Council, Shire Hall, Chelmsford. January 9.

A Rubber Technologist to take charge of the rubber section of Government laboratory near Salisbury.—The Commandant, Experimental Station, Porton, Wiltshire.

A Reader in Chemistry at Bedford College for Women.—The Academic Registrar, University of London, South Kensington, London, S.W.7.

British Association of Chemists

Its Work during 1927

THE membership of the Association continues to increase in a satisfactory manner, and such resignations as have been received have, in the great majority of cases, been tendered by those leaving the profession.

The improved financial position has been maintained, and it is hoped that in succeeding years it will be possible to place an increasing sum to reserve. The position of the Unemployed Benefit Fund is, owing to the increased subscription, now in a thoroughly satisfactory condition, and during the past year the sum of £1,035, the largest ever disbursed, has been paid out in benefits.

The Legal Aid Department has been exceedingly active, although since the judgment concerning sufficient notice it has not been necessary to proceed to Court. The work of the Department has been of service, not only to members of the Association, but to the whole profession, since the principle of three months' notice naturally includes all professional chemists. A large number of cases of dispute have been satisfactorily dealt with, and valuable advice given to members concerning agreements and other important legal matters.

Relations with Government Departments

The Association's relations with other societies and with the Government Departments have been very cordial, and in especial allusion may be made to the Association's negotiations with the Ministry of Labour upon the question of the employment of chemists of foreign nationality in the beet sugar and other industries. Most sympathetic attention has been given to the Association's representations, and the Council has every reason to be satisfied with the position as it stands at present. A memorandum on the subject has been addressed to the Ministry, and the Department has expressed its appreciation of the careful consideration the Association has given to the matter.

The more difficult question of the title "chemist" has also been made the subject of a memorandum which was forwarded to the Committee of the Pharmacy and Poisons Act. Since the Committee desires that at present the question shall be regarded as confidential, it has been impossible to do more than to acquaint the members of the Association confidentially with the text of the Memorandum. It is hoped, however, that it will be possible later to publish it in full.

The matter of salaries and status is one to which serious attention has been given, with, in the majority of cases, satisfactory results. The best conditions have been obtained in cases where members have consulted the Association before taking up an appointment; and all members who have any reason to be dissatisfied with the conditions offered to them, or who are asked to accept those incompatible with the status of a professional chemist, are urged, not only on their own behalf, but in that of their professional colleagues, to seek the Association's opinion and advice.

In the matter of publicity, the Association has done much to interest the public in the activities of the profession and its relation to the welfare of the community.

Hercules Products

THE Hercules Powder Co. claim for their American wood rosin and American steam distilled wood turpentine, that they are equal to the similar grades of gum rosin for nearly all commercial purposes. The Hercules products have given remarkably good results in actual use, and the makers guarantee them to be free from foreign matter of all kinds. As an example of the care taken in the productions of Hercules Naval Stores, the makers state that their specifications for wood rosin and steam distilled wood turpentine are actually more exacting in many particulars than the specifications already accepted as evidence of first-rate quality and essential properties. An interesting book giving full details of Hercules Naval Stores has been published for the guidance of turpentine and rosin users. A complimentary copy of the book may be obtained on application to the sole agents, Langley-Smith and Co., Ltd., of 14-20, St. Mary Axe, E.C., to whom all inquiries should be addressed.

Chemists and Industry

To the Editor of THE CHEMICAL AGE.

SIR,—Many of us are accustomed to look to Sir Alfred Mond for authoritative dicta on matters both of academic and industrial chemical importance, but one feels impelled to view with grave concern his recent dictum (THE CHEMICAL AGE, XVII, 554, 1927), that "there is a definite shortage of scientific men in this country," and that his company had decided "to approach headmasters with a view to selecting bright boys when still at school. Those boys would be assured that, if they would go through a university and obtain first-class degrees, they would not have to look for a job."

Quite apart from the fact that a suggestion that this country lacks sufficient scientific men is something of a reflection upon those already engaged in the profession of chemistry, it has the danger of being likely to tempt even larger hordes of students into a profession which is already, in some respects, overcrowded. Nobody will disagree with Sir Alfred when he says that more and broader research is vital to Imperial prosperity, but is he justified in implying that the men to accomplish this are not available? Many of us think that he is wrong, but be that as it may, that which calls for more definite comment is the proposal, apparently already adopted by the I.C.I., to attempt the remedy of this condition by the means indicated in the quotation above.

Apart from the obvious difficulty of selecting the "bright boys"—and "bright boys" do not always turn into "bright chemists"—there is the manifest danger of offering an assured future to immature youths, contingent upon their securing a "first-class degree." In the first place, the candidates' horizon is narrowed, and everything becomes subsidiary to the securing of a "First"; and in the second place, that coveted distinction, of itself, means very little; ability to think, not ability to cram, should be the criterion.

One cannot help feeling that Sir Alfred is directing his energies to the grist, while all the time it is the mill that should receive his attention; namely, the question of chemical education. When an undergraduate becomes a Bachelor of Arts, he is not, *ipso facto*, either a barrister or a clerk in holy orders, not yet is the graduate medico immediately translated into a competent physician and surgeon. The larval graduate must enter upon the pupal stage before assuming the imaginal dignity of professional status. It is not sufficiently recognised that this should be so with the chemist; nowadays, a B.Sc. (Honours Chem.) considers himself, *ipso facto*, a chemist; nothing, in reality, is farther from the facts, since the graduate has merely provided himself with the necessary tools—he has yet to acquire his skill and be admitted as a craftsman.

The remedy is to hand. Broaden the degree course to include more fundamentals and less ill-digested fact food; insist on graduates training for three years before admission to the status of chemist, and let such admission be secured only by passing the carefully designed tests of a central professional body provided with such powers as are associated with the British Medical Association—a body which could be formed from our present Institute of Chemistry if chemists only knew the meaning of co-operation.

Reorganisation, slight as it is, along these lines would rapidly remove any cause for lament that Sir Alfred may have; it would also achieve the far more important matter of the unification of the chemical profession.—I am, etc.,

G. MALCOLM DYSON.

The Bungalow, Woodfield Road,
Cheadle-Hulme, Cheshire.

Chemical Industry Club Dinner

FOR the past three years the Chemical Industry Club has held its annual dinner in conjunction with other chemical societies; but this year, owing to the incidence of the jubilee celebrations of the Institute of Chemistry, it has been thought better to allow the combined dinner to lapse, and for the club to hold a dinner for its own members. This will be held on Friday, February 3, in the Connaught Rooms, at 7.15 for 7.45 p.m. Sir Ernest Benn will be the principal speaker, and the toasts will be followed by a smoking concert, for which a number of well-known artists have been engaged. Tickets, price 12s. 6d. each (wines excluded), may be obtained from the Secretary, Chemical Industry Club, Whitehall Court, S.W.1. Dr. Dehn, the chairman of the club, will preside.

Chemical and Dyestuffs Traders

Results of Recent Negotiations

THE British Chemical and Dyestuffs Traders' Association announce that arrangements have been made for small packets, containing *bona-fide* trade samples of chemicals liable to Key Industry Duty, to be imported by sample post from places abroad, from January 16, 1928, subject to the following conditions:—

1. The gross weight of each packet must not exceed 8 ounces, and the regulations regarding Foreign Sample Post must be strictly complied with.
2. Each packet must bear the full name and address of the consignee, and must also be addressed "c/o The Officer of Customs and Excise, Mount Pleasant Depôt, G.P.O., London, E.C.," and must be conspicuously marked with particulars of the contents and declared to be trade samples.
3. A Post Office fee of sixpence for clearance through Customs will be charged on each packet on which Customs duty is levied, and this fee, together with the duty, will be collected upon delivery.
4. Dutiable samples imported by Sample Post otherwise than in accordance with the provisions of this notice will be detained and liable to forfeiture.

This new arrangement has been secured as the result of long negotiations. Hitherto, members have experienced great inconvenience by having samples detained by Customs. Members should inform foreign firms of this new arrangement, and request them to post samples of K.I.D. products by Sample Post, marking the packet as directed. Samples liable to the Dangerous Drugs Act or the Dyestuffs (Import Regulation) Act, must not be dealt with in this manner.

Key Industry Exemption Orders

The period of exemption of the under-mentioned products expires on March 6, 1928. The Board of Trade have given notice that they will receive representations from interested parties up to January 8 next, after which they will decide whether any or all the exemption orders are to be extended for a further period.

R Acetone
R Acetone fermentation
R Acetone synthetic
Acid Oxalic
Amidopyrin
Ammonium perchlorate
Barbitone
Dial
Didial
Elbon
Ethylene Bromide
Ethylene Glycol
Furfural
Glycol Ethers
Guaiacol Carbonate
Hydroquinone
R Lead Acetate
Lead Tetra-ethyl
Lipoiodin
Methyl Sulphonal
Phenacetin
Phenazone
Phytin
Piperazine
Pyramidon-veronal
R Potassium Hydroxide
R Potassium guaiacol-sulphonate
Salol
Sulphonal
Urea

"Containers on Loan and Returnable"

Negotiations with Customs have now been completed. The Department have advised "that they will not insist on the inclusion of the cost of such return in the value of the goods for the purpose of assessment of duty." In 1922 Customs sought to levy Key Industry Duty on the full value of containers on loan and returnable. This ruling was contested, and after six months of negotiations it was cancelled. This year Customs ruled that importers must pay duty "on the cost of returning such containers." This was also contested, and the Department has now withdrawn this demand.

The position is now quite clear. Neither the containers on loan nor the cost of returning them are liable to Key Industry Duty. When importing dutiable goods in containers on loan, members should arrange for their invoices handed to Customs to state: (1) The "naked" value of the material; and (2) that the containers (whether drums, cylinders, or bottles) are on loan and returnable. No value should be stated. Members who have in the past paid deposits on "containers on loan" should at once apply for a full refund of such amounts. The Customs reference number to be quoted is 67268/27.

From Week to Week

THE DIPLOMA OF THE IMPERIAL COLLEGE of Science and Technology is now granted in chemical engineering.

MR. ERNEST WALLS, managing director of Lever Brothers, Ltd., has resigned from his position on the board.

MR. R. A. PUNTER, Mr. P. A. Smith, and Mr. W. B. Blewett, of Imperial Chemical Industries, Ltd., are in Australia, and Sir Max Muspratt is expected to arrive shortly.

A FIRE BROKE OUT shortly before ten o'clock on Wednesday evening among some rubbish in F.74a, a proof yard in Woolwich Arsenal. The fire was put out in a few minutes.

ON BEHALF OF LEVER BROTHERS, LTD., a Bill has been deposited for introduction into Parliament next session to extend the time for completing their authorised dock at Bromborough.

MALAYAN IMPORTS of chemicals, drugs, dyes and colours during the first three quarters of 1927 totalled £1,942,757, as compared with £1,714,908 in the corresponding period of last year.

COLONEL SIR E. A. BROTHERTON, Bart., left England on the 4th inst. for a visit to South America. He will be absent for three months, and correspondence will not be forwarded.

THE I.G. FARBENINDUSTRIE A.-G. has acquired the majority of the shares of the Lignose-Film G.m.b.H., thus obtaining possession of the Filmfabrik Buchen and control of the Phöbus-Film A.-G.

ROBERT WATSON SCOTT, of Scunthorpe, a chemistry master, was fined £5 at Scunthorpe on Monday for having been drunk in charge of a car and £5 for having driven to the danger of the public, with 45s. costs.

PROFESSOR W. L. BRAGG, of Manchester, who has been invited to give a course of lectures on "Crystal Structure" at Boston by the Massachusetts Institute of Technology, was a passenger on the White Star liner *Laurentic*, which left Liverpool on Saturday, December 31.

SCOTT, BADER AND CO., LTD., merchants and agents for celluloid products, varnish and synthetic resins and artificial horn, have removed to a new office at 2–4, Broad Street Place, London, E.C.2. Telephone number, London Wall 7576 and 7577; telegraphic address, Eredabott Ave-London.

A COMMISSION, APPOINTED IN SWEDEN to work for the preparedness of the industries of the country against the possible advent of a time of national emergency, has recommended the Government to include in its next Budget the provision of 1,250,000 kroner for the equipment of a State saltpetre acid works, at Ljungaverk.

THE DISPLAY OF 700 OF THE LEADING MANUFACTURERS in the country to be staged in the heavy section of the British Industries Fair at Birmingham exceeds in importance the expectations of the organisers, the Birmingham Chamber of Commerce, which has on this account recently authorised a further expenditure of £30,000 on structural extensions.

WHILE WORK WAS IN PROGRESS on a chemical pan lid at the iron works of Thomas Broadbent and Sons, Ltd., a retaining rope broke. The lid swung round, injuring Henry Hirst, aged 65, a chemical plumber, who subsequently died. At an inquest at Huddersfield on Thursday, December 29, the jury found that he died as a result of injuries accidentally received.

MR. G. A. JULIUS, chairman of the Commonwealth Council for Scientific and Industrial Research, who was the leading representative for Australia at the Imperial Agricultural Research Conference, left for Australia this week. During his stay here Mr. Julius has visited most of the important research stations in Great Britain and on the Continent, and has established a close connection with various scientific bodies in this country.

MR. C. H. BIRKITT, B.Sc., A.I.C., has joined James Lyne Hancock and Co., Ltd., as chief chemist. Mr. Birkitt has for the past two years acted as hon. secretary to the London section of the Institution of the Rubber Industry. After gaining much experience with the Beldam Tyre Co. (1920), Ltd., he assisted Dr. Schidrowitz in research work, and until his new appointment has acted as assistant to Dr. T. J. Drakeley at the Northern Polytechnic.

RECENT WILLS INCLUDE:—Mr. Jesse Shirley, head of J. Shirley and Sons, chemical manure manufacturers, Stoke-on-Trent, £76,911.—Mr. James Sanderson, senior partner of R. and A. Sanderson and Co., left large sums of money for technical and scientific research, and it is thought that a bequest to Edinburgh University may possibly amount to £35,000.—Mr. John Whewell Simpson, a director of the Bleachers' Association, Ltd., £208,657 (net personalty, £203,383).

THE FOUNDATION of an Institute of Chemical Documents was decided upon at a conference in Paris. Forty States were represented, including all the great powers except Great Britain and the U.S. The members will pay a contribution proportional to their population. It was pointed out at the conference that in chemistry intellectual production and original literature had become so vast that it seemed advisable to provide an institution combining all the documents, books, technical and scientific periodicals, patents, brochures, notices, and catalogues of the world.

MR. A. O. PEECH has resigned from the chairmanship of United Steel Companies, Ltd., and is to be succeeded by Mr. W. Benton Jones.

A NITROGEN PLANT ON THE CLAUDE process is under construction at Moravska Ostrava, Moravia, and is expected to commence production in March, 1928.

MR. H. BUEB, the son of Dr. Julius Bueb, of the I.G. and the Stickstoff-Syndikat, has taken up a temporary position in the sales department of Nitram, Ltd.

THE SATANITE POWDER AND EXPLOSIVES FACTORY at Lanaeken, Belgium, was entirely destroyed by fire on Saturday, December 31, seven persons being killed and two seriously injured.

A VERDICT THAT he poisoned himself whilst of unsound mind was returned at a Dewsbury inquest on Monday on Thomas Henry Auty (28), analytical chemist, of Neill Road, Sheffield.

DR. W. W. WEIR, associate soil technologist of the Bureau of Chemistry, U.S. Department of Agriculture, has accepted the post of manager of the editorial and research department of the Chilean Nitrate of Soda Bureau, New York.

PROFESSOR ARTHUR SMITHELLS, F.R.S., on Wednesday, at the Royal Society of Arts, London, delivered the first Dr. Mann Juvenile Lecture, entitled "Smoke." The second will be delivered on Wednesday next, January 11, at 3 p.m.

MR W. N. BURBRIDGE, A.I.C., A.M.I.CHEM.E., has been appointed general works manager at the new works at Alperton of the Britannia Rubber and Kamptulicon Co., Ltd. Mr. Burbridge was for some years with James Lyne Hancock and Co., Ltd.

THE SANTIAGO NITRATE CO., LTD., announce that owing to the retirement of Mr. Frames, Mr. J. W. Welch has been appointed secretary of the company, whose address in future will be Baltic House, Leadenhall Street, London, E.C.3. Telephone: Avenue 0818.

A BEGINNING WAS LAST WEEK made with the demolition of the "Townsend stalk," a chimney 381 ft. high, at the Townsend's Chemical Works, which is now being removed from the Townhead district of Glasgow. It was claimed that the chimney was the highest of its kind in the world.

MR. NALTON WOMERSLEY has, as from January 1, 1928, admitted into partnership his nephew, Mr. Leonard Womersley, who has been associated for some years with him in the firm of Robert Womersley and Son, chemical manufacturers and drysalters, of 7, Osborne Place, Whitechapel, London, E.

A MEETING OF THE CHEMICAL ENGINEERING GROUP will be held on Friday, January 13, 1928, in the rooms of the Chemical Society, Burlington House, Piccadilly, London, W.1, when a paper entitled "The Manufacture of Artificial Silk, with Special Reference to Viscose," will be read by H. R. S. Clotworthy, A.I.C. The chair will be taken at 8 p.m. by Professor E. C. Williams.

THE MAIN ROADS DEPARTMENT, NO. 2 DIVISION, of the Devon County Council, invites tenders for the supply of tar macadam, refined tar, bituminous compounds, lubricating oil, etc., for the year ending March 31, 1929. Forms of tender and details are obtainable from the Divisional County Surveyor, 21, Southernhay West, Exeter, to whom tenders have to be delivered on or before Monday, January 23.

THE THIRD CENSUS OF PRODUCTION (1924) is being published in the form of preliminary reports in the *Board of Trade Journal*. The report published in the issue of the *Journal* this week (January 5) is No. 30, and deals with the chemical and allied trades, the explosives and fireworks trades, and the oil and tallow trades, among others. Details of chemical interest will be given in next week's issue of THE CHEMICAL AGE.

SALES OF NITRATE OF SODA reported by the Nitrate Producers' Association for the fortnight ended December 15 last amounted to 72,156 metric tons for delivery up to June, 1928. The total sales reported since the introduction of free selling are now 2,605,809 metric tons (including 68,149 metric tons disposed of for shipment in the period July, 1928, to February, 1929). It is understood that further sales of the fertiliser have since been effected at about 17s. to 17s. 3d. per metric quintal.

A CONFERENCE AT ASKERN COLLIERY, DONCASTER, on Wednesday, discussed plans for establishing there a low-temperature carbonisation plant. It is hoped to deal with 500 tons of soft coal daily, providing night and day work throughout the year for many additional hands, and producing 3,000 tons of smokeless fuel, and 12,000,000 cubic feet of gas weekly. The originators of the process are Low Temperature Carbonisation, Ltd., of Barugh, near Barnsley, who are co-operating in the Askern scheme.

UNIVERSITY NEWS.—*London*: The D.Sc. degree in chemistry has been conferred upon Miss P. V. M'Kie (Bedford College) for a thesis on "The Interaction between Nitric Acid and Unsaturated Compounds"; and upon Mr. A. W. Chapman (Imperial College—Royal College of Science) for a thesis on "Studies of Isomeric Change—with special reference to the Molecular Rearrangement of Imino-aryl Ethers."—Mr. H. A. Fells, of Mansfield, has been awarded the degree of Ph.D. in Chemistry.

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A preliminary investigation of the nitrogenous matter in coal. C. W. Shacklock and T. J. Drakely. *J.S.C.I.*, December 30, pp. 478–481T.

COLLOIDS.—The influence of alkalis on the coagulation of silica and clay suspensions by alkali chlorides. H. B. Oakley. *J. Chem. Soc.*, December, pp. 3054–3065.

GENERAL.—Marcellin Berthelot and synthetic chemistry. H. E. Armstrong. *J. Roy. Soc. Arts*, December 30, pp. 145–171.

Hydrocarbon synthesis for carbon monoxide and hydrogen. O. C. Elvins. *J.S.C.I.*, December 30, pp. 473–478T.

Magnesium compounds and their use in the rubber industry. E. B. Warren. *Rubber Age*, January, pp. 443–445.

GLYCERIDES.—The lower glycerides of palmitic acid. W. Brash. *J.S.C.I.*, December 30, pp. 481–482T.

Investigation of the constitution of the glycerides in natural fats. A preliminary outline of two new methods. T. P. Hilditch and C. H. Lea. *J. Chem. Soc.*, December, pp. 3106–3117.

United States

ALCOHOL.—Anhydrous alcohol in America. L. C. Cooley. *Chem. Met. Eng.*, December, pp. 724–728.

COAL.—Developments in the "braunkohle" (lignite) industry of Germany. C. W. Cuno. *Chem. Met. Eng.*, December, pp. 729–731.

FOOD.—Chemical aspects of mayonnaise. D. M. Gray. *Oil and Fat Industries*, December, pp. 410–425.

GENERAL.—Removing hydrogen sulphide from coke oven gases. W. Gluud and R. Schönfelder. *Chem. Met. Eng.*, December, pp. 742–743.

Hydro-electric fuel. A. T. Stuart. *Ind. Eng. Chem.*, December 1, pp. 1321–1324.

A study of auto-ignition temperatures. H. A. Masson and W. F. Hamilton. *Ind. Eng. Chem.*, December 1, pp. 1335–1338. A new form of apparatus, combining high accuracy and sensitivity with simple construction, has been developed. The auto-ignition temperatures of a number of pure substances in air at normal pressure have been determined and their significance is indicated.

Formation of hydrogen sulphide by the natural reduction of sulphates. L. Elion. *Chem. Met. Eng.*, December 1, p. 1368.

OILS.—The chemical and physical characteristics of cod liver oil. A. D. Holmes and W. Z. Clough. *Oil and Fat Industries*, December, pp. 403–409. Results obtained from the examination of over one hundred samples of known origin.

The chemical composition of Spanish olive oil. G. S. Jamieson. *Oil and Fat Industries*, December, pp. 426–427.

Possibilities of a lumbang oil industry. F. W. Glaze. *Chem. Met. Eng.*, December, p. 749.

German

ANALYSIS.—A method of detecting and determining small quantities of manganese in water. R. Schmidt. *Chemiker-Zeitung*, December 31, pp. 1015–1016.

COLLOIDS.—Recent work on the preparation and the properties of colloidal metals and their compounds. J. Reitstötter. *Osterreichische Chem.-Zeitung*, December 15, pp. 217–220.

COLOUR AND CONSTITUTION.—The effect of phenoxy groups and their derivatives on the halochromie phenomena in known chromogens. Heteropolar compounds. V. W. Dilthey, E. Bach, H. Grütering, and E. Hausdörfer. *J. praktische Chemie*, Vol. 117, Parts 10–12, pp. 337–368.

FOOD, ETC.—New results of research on the provision of drinking water. J. Tillmans. *Zeits. angewandte Chem.*, December 22, pp. 1533–1539.

Researches on ammonia-carbon dioxide compounds (salt of hartshorn), especially ammonium bicarbonate as accelerators in baking. T. Paul. *Zeits. angewandte Chem.*, December 22, pp. 1539–1548.

GENERAL.—The alteration of gas specimens on keeping, and a remedy. O. Hackl. *Chemiker-Zeitung*, December 24, pp. 993–994.

The Babylonian-Assyrian artificial lapis lazuli. B. Neumann. *Chemiker-Zeitung*, December 31, pp. 1013–1015.

ORGANIC.—Organic compounds of silicon. I. Some phenolic esters of silicic acid. H. Jörg and J. Stetter. *J. praktische Chemie*, Vol. 117, Parts 10–12, pp. 305–310.

The rearrangement of hydrazines by oxymethylene-ketones and their derivatives. II. K. von Auwers and H. Mauss. *J. praktische Chemie*, Vol. 117, Parts 10–12, pp. 311–336.

Organic substances of prehistoric times. O. Loew. *Zeits. angewandte Chem.*, December 22, pp. 1548–1549.

Aliphatic 1 : 3-keto-bases and the corresponding alcohol bases. C. Mannich and W. Hof. *Archiv Pharmazie*, November, pp. 589–598.

(*N*-piperidinomethyl-)cyclohexanone and related compounds. C. Mannich and P. Hönig. *Archiv Pharmazie*, November, pp. 598–610.

Miscellaneous

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COLLOIDS.—The measurement of refractive indices in colloidal solutions. A. Boutaric and G. Perreau. *RevueG énérale Colloïdes*, August, pp. 658–662 (in French).

DYESTUFFS.—The action of light on nitrated colouring matters. A. Seyewitz and D. Mounier. *Comptes Rendus*, December 5, pp. 1279–1281 (in French).

GENERAL.—Titanium white. III. Properties, uses, and commercial form. H. Braidy. *L'Industrie Chimique*, November, pp. 486–490 (in French).

On the reversibility of enzyme action. I. B. Suzuki and T. Maruyama. *Proc. Imperial Academy Japan*, October, pp. 533–535 (in English).

Theoretical and practical points on Eau de Javel and bleaching powder. J. H. Frydlender. *Revue Produits Chimiques*, December 15, pp. 881–884 (in French).

Velocity measurements on the opening of the lactone ring in derivatives of phthalide. A. Tasman. *Recueil Travaux Chimiques Pays-Bas*, December 15, pp. 922–924 (in English).

The phenomena accompanying plastification. The resultant approximate rules for the technology of plastic substances. J. Obrist. *Revue Générale Colloïdes*, August, pp. 649–657 (in French).

The application of spectro-colorimetry to tinctorial practice. A. Bytebier. *Revue Chimie Industrielle*, November, pp. 363–365 (in French).

The synthetic tannins. L. Meunier and C. Castellu. *Bull. Société d'Encouragement*, November, pp. 732–742 (in French).

On the production of glycerine by fermentation (fourth report). Dissociation of acetaldehyde-bisulphite complex in alkaline solution. Y. Tomoda. *J. Soc. Chem. Ind. Japan* (supplemental binding), November, pp. 189–191B (in English).

ORGANIC.—The conditions which interpose in the oxidation of organic molecules. II. (i) Acetaldehyde; (ii) Pyruvic acid. C. Fromageot. *J. Chimie Phys.*, Vol. 24, Part 9, November 25, pp. 623–656 (in French).

Studies on bios. III. B. Suzuki and G. Hamamura. *Proc. Imperial Academy Japan*, October, pp. 521–525 (in English).

On the separation of glycerides. I. Linseed oil. B. Suzuki and Y. Yokoyama. II. Soya bean oil. B. Suzuki and Y. Yokoyama. III. Train oil. B. Suzuki and G. Masuda. *Proc. Imperial Academy Japan*, October, pp. 526–528, 529–530, 531–532 (in English).

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

280,973. DISPERSION OF SOLIDS AND LIQUIDS, APPARATUS FOR. W. H. Whatmough, 119, Queen Victoria Street, London, E.C.4. Application date, May 29, 1926.

Rotary disc colloid mills for dispersing solids in liquids tend to permit the passage of some solid matter without sufficient dispersion when the percentage of solids is above a certain amount, and the object of the invention is to avoid this defect.

Two rotating rollers 1 are mounted in blocks 2 which are adjustable towards one another in a frame 3 by means of screws 4. A hopper 6 is mounted between the rollers, and is pressed downwards by springs so that the end walls are in contact with the rollers. Frames 9 are provided to carry grinding blocks 10 which are pressed against the rollers by screws 8. The spindle 15 of each roller carries a disc, the

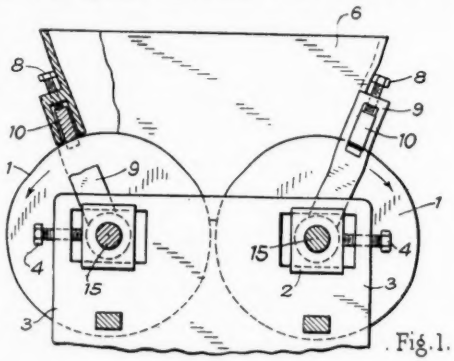

Fig.1.

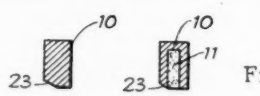

Fig.5.

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plane of which is inclined to the axis at an angle other than a right angle. The disc rotates between two small rollers so that it causes the rollers 1 to have a longitudinal reciprocating movement. The blocks 10 may have inserts of flexible material 11, and/or a bevelled leading edge 23. The material to be dispersed is placed in the hopper, and the bevelled edges cause coarse particles to be crushed before they are dispersed in the liquid by means of the wiping action of the smooth portion of the grinding blocks and of the flexible inserts. The reciprocating movement of the rollers prevents incomplete dispersion due to the existence of any grooves in the rollers or grinding blocks.

281,134. CALCIUM FORMALDEHYDE SULPHOXYLATE, PRODUCTION OF. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February 14, 1927.

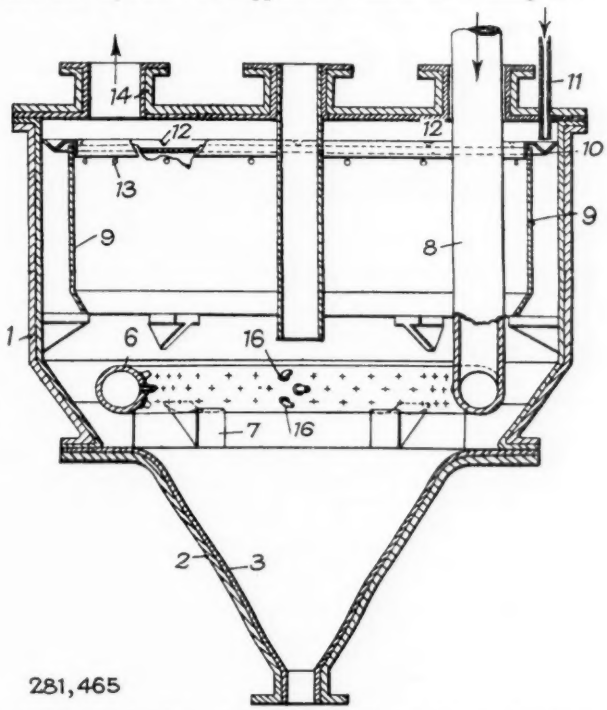
It is known that a dicalcium salt containing one atom of sulphur to one atom of calcium can be precipitated from an alkali metal formaldehyde sulphoxylate and milk of lime, but the precipitation is incomplete. In this invention, a difficultly soluble calcium salt is obtained in quantitative yield containing four atoms of sulphur to three atoms of calcium by treating a solution of alkali metal formaldehyde sulphoxylate with calcium chloride and calcium hydroxide, caustic soda, or caustic potash. Calcium carbonate or alkali carbonate can be employed at a higher temperature. Examples are given.

281,459. COMPOSITE TITANIUM PIGMENTS, MANUFACTURE OF. H. Wade, London. From the Titanium Co., Inc., 94, Fulton Street, New York. Application date, November 9, 1926.

The process is for the production of a composite pigment of titanium oxide and calcium sulphate. The calcium sulphate is suspended in titanium sulphate solution and is of acicularly crystalline form, since it has been found that this gives an increased covering power. Titanium oxide is precipitated on the calcium sulphate. The acicular calcium sulphate may be obtained by treating lime or calcium carbonate with dilute sulphuric acid, or by calcining gypsum or artificially prepared sulphate, milling the product, and treating it with water to obtain a hydrated salt. The calcium sulphate is added to the titanium solution in the form of a concentrated pulp. The composite precipitate may be calcined together with phosphoric acid or calcium phosphate, which prevent colour change during the calcination. The product may be used as a pigment for paints without the usual milling operations. Several examples are given.

281,465. SATURATORS FOR THE MANUFACTURE OF CRYSTALLINE SALTS. E. M. Weyman, Long Close, Hexham, Northumberland, and R. P. Wallis, Dunelm, Woodcote, Valley Road, Purley, Surrey. Application date, November 18, 1926.

The apparatus is suitable for the production of ammonium sulphate or other crystalline salts with a minimum of small dust-like crystals. The apparatus consists of a casing 1, 2



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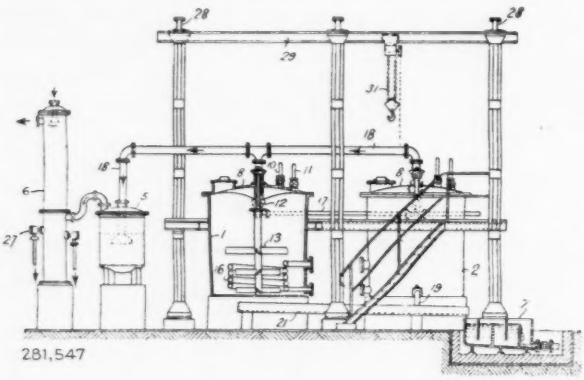
of cast iron having a lead lining 3, the part 2 serving as a storage base for the crystals. The ledge between the two parts 1, 2 supports a circular pipe 6 carried on blocks 7 clear of the walls. The gas is admitted through a pipe 8 into the pipe 6, and is injected by nozzles 16 with a whirling motion into the liquid. A cylinder 9 of lead projects downwards into the saturator from an annular channel 10 into which the liquid, *e.g.*, sulphuric acid, is admitted through a pipe 11. The acid passes into the saturator in a number of small streams through notches 12, and passes downward between the cylinder 9 and the outer wall. The acid thus tends to exert a solvent action on any salt which tends to crystallise on the walls of the saturator, and carries it downwards to the cone 2. The pressure above the liquid is equalised on the two sides of the

screen 9 by small openings 13. Waste gas passes out through the pipe 14. It is found that the crystals must be kept in a state of motion while forming, to form a uniform size and shape, and that this movement must take place where the gas and liquid interact, so that new solid matter is deposited on crystals already formed.

281,547. Recovering Sulphuric Acid from the Acid-Tar of Benzol Purification, Process for. C. Still, 4, Bismarckplatz, Reckinghausen, Germany. International Convention date, December 22, 1926. Addition to 277,619.

Specification No. 277,619 (see The Chemical Age, Vol. XVII, p. 467) describes a process in which the acid tar is mixed with aqueous ammonium sulphate and heated till the acid resins are separated out. The ammonium sulphate and recovered acid are returned to the ammonia saturator. In this invention, external heating is not used. Two mixing and regenerating vessels 1, 2 are provided with rotary agitators 13, mounted on shafts 12, and each vessel is provided with a steam heating coil 16. Tar and water are introduced through pipes 10, 11 and the acid tar or ammonium sulphate is supplied through pipe 17, while gases and vapour are discharged through pipe 18. Ammonium sulphate liquor is supplied from a saturator through pipe 17 at a temperature of 55° C., or if at



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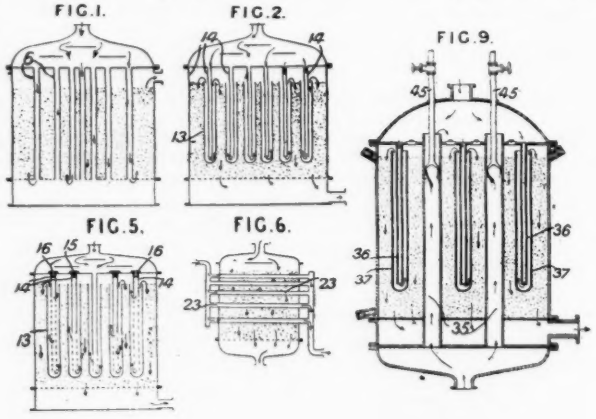
a lower temperature is heated to that point by coil 16. Acid tar is then introduced and the agitator 13 is then operated, but no heat is supplied. The mixture is then allowed to stand, and separates into two layers, the lower containing ammonium sulphate and sulphuric acid and the upper containing resin and benzol. The lower layer is drawn off at 19 to a trough 21 and separator 7, in which any resin is retained. The resin remaining in the vessel 1 is heated to evaporate benzol hydrocarbons which pass into the pipe 18 and then to a washer 5 where they are treated with caustic soda lye. The vapour then passes to a condenser 6, where benzol is condensed by a cold water spray, and is run off at 27. The remaining resin may be mixed with tar or tar oil to maintain it in liquid condition and enable it to be transported through pipes. The resin may be washed with water to remove any acid or ammonia salts. Cross girders 28, 29 are provided to support lifting tackle 31 for the covers 8 of the vessels 1, 2.

Note.—Abstracts of the following specifications which are now accepted, appeared in The Chemical Age when they became open to inspection under the International Convention :—258,910 (I. G. Farbenindustrie Akt.-Ges.) relating to preparation of Bz2-hydroxybenzanthrone, see Vol. XV, p. 528 ; 259,554 (A. C. Jessup) relating to electrolytic preparation of magnesium and metals of the alkaline earths, see Vol. XVI, p. 7 (Metallurgical Section) ; 261,423 (Soc. of Chemical Industry in Basle) relating to dyeing cellulose esters, see Vol. XVI, p. 121 ; 261,748 (Consortium für Elektro-Chemische Industrie Ges.) relating to products resembling rubber, see Vol. XVI, p. 121 ; 263,862 (H. Staudinger) relating to hydrocyclocaoutchouc, see Vol. XVI, p. 264 ; 274,902 (I. G. Farbenindustrie Akt.-Ges.) relating to derivatives of acenaphthene, see Vol. XVII, p. 311 ; 275,622 (I. G. Farbenindustrie Akt.-Ges.) relating to unsymmetrically substituted diamino propanols, see Vol. XVII, p. 352 ; 276,012 (I. G. Farbenindustrie Akt.-Ges.) relating to 1-amino-3-dialkylamino-2-propanols see Vol. XVII, p. 373 ; 277,619 (C. Still) relating to recovery of sulphuric acid from the acid tar of benzol purification, see Vol. XVII, p. 467.

International Specifications not yet Accepted

279,819. Catalytic Apparatus. Selden Co., 339, 2nd Avenue, Pittsburg, U.S.A. (Assignees of A. O. Jaeger, Crafton Heights, Pittsburg, U.S.A.). International Convention date, October 27, 1926.

A uniform cooling effect is produced at any horizontal cross-section by spacing tubes carrying the cooling gases more closely towards the centre of the catalyst mass, or by varying the relative velocities of the gases passing through the inner and outer tubes. The cooling tubes may be vertical, and may be simple (Fig. 1) or concentric tubes (Fig. 2) arranged



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more closely together at the centre of the casing, or the tubes may be equally spaced (Fig. 5) and the gas velocity varied by inserting throttling devices 15, 16 in some tubes. Variation can also be obtained by perforating part of the length of the tubes. Horizontal tubes 23 (Fig. 6) can be used, spaced more closely at the upper part where more heat is liberated near the gas inlet. Fig. 9 illustrates concentric cooling tubes 36, 37, and also tubes 35, into which a liquid or solid reagent is introduced through tubes 45 so that it vaporises on the walls.

279,855. Hydrogenation of Phenols. Chemische Fabrik auf Actien, vorm. E. Schering, 170, Mullerstrasse, Berlin. International Convention date, October 26, 1926. Addition to 273,685.

The mixture of alkyl-isopropylene-phenols and alkyl-coumarones described in Specification 273,686 (see The Chemical Age, Vol. XVII, p. 222) is hydrogenated without previous fractionation till two or eight atomic proportions of hydrogen are combined, and the mixture fractionated *in vacuo* to obtain thymol, menthol, and their isomers.

279,856. Phenol-ketone Condensation Products. Chemische Fabrik auf Actien, vorm. E. Schering, 170, Mullerstrasse, Berlin. International Convention date, October 26, 1926. Addition to 273,684. (See The Chemical Age, Vol. XVII, p. 221.)

A mixture of *o*- and *p*-cresol and condensed, for example, with acetone by saturating with hydrochloric acid gas and heating. The excess cresol is blown off with steam and the residue distilled *in vacuo* to obtain a resinous material from which the *m*-cresol-acetone product is crystallised out from an ether solution.

279,857. Phenols and Coumarones. Chemische Fabrik auf Actien, vorm. E. Schering, 170, Mullerstrasse, Berlin. International Convention date, October 26, 1926.

The etheric condensation products of *m*- and *p*-cresol with ketones are treated with a surface catalyst at boiling point to obtain alkyl-isopropylene-phenols and alkyl-coumarones. The catalyst may be a bleaching earth, fuller's earth, diatomite, silica gel, or charcoal ; and nickel or nickel oxide may be deposited on it. The products can be hydrogenated to thymol and menthol (see 279,855 above).

LATEST NOTIFICATIONS.

282,337. Processes of chromium plating, and products thereof. Patten, J. C. October 20, 1926.
282,340. Processes for the distillation of mineral fuels at low temperatures. Compagnie des Mines de Bruay. December 18, 1926.
282,342. Production of fuel from oils and its introduction into explosive engines. Marion Steam Shovel Co. December 15, 1926.
282,347. Process for making dihydroxy-acetone. I. G. Farbenindustrie Akt.-Ges. December 18, 1926.
282,356. Process for the preparation of bile acid salts of cinchona alkaloids. Chemical Works (formerly Sandoz). December 17, 1926.
282,367. Distillation of tar and recovery of products therefrom. Barrett Co. December 14, 1926.
282,375. Manufacture and production of alkylpyrazolanthrones. I. G. Farbenindustrie Akt.-Ges. December 14, 1926.
282,379. Process for the production of hydrocyanic acid. Frank, Dr. A. R., and Caro, Dr. N. December 17, 1926.
282,384. Manufacture and production of valuable liquid products from varieties of coal, tars, mineral oils, and the like. I.G. Farbenindustrie Akt.-Ges. December 20, 1926.
282,409. Manufacture of acid wool dyestuffs. I. G. Farbenindustrie Akt.-Ges. December 14, 1926.
282,410. Manufacture of metal catalysts. I. G. Farbenindustrie Akt.-Ges. December 14, 1926.
282,412. Process for the manufacture of alkyl-β-halogen-ethyl ketones. Schering-Kahlbaum Akt.-Ges. December 15, 1926.
282,414. Process for producing oil-soluble phenol-aldehyde condensation products. Bakelite Ges. December 14, 1926.
282,427. Process for the manufacture of metal and metalloid mercapto acid esters. Schering-Kahlbaum Akt.-Ges. December 16, 1926.
282,435. Synthetic resin and new process of making the same. Fibre Diamond. December 16, 1926.
282,450. Manufacture of 2-aminonaphthalene-3-carboxylic acid and an intermediate compound. I. G. Farbenindustrie Akt.-Ges. December 17, 1926.
282,452. Process for the manufacture of dyestuffs of the anthraquinone series. I. G. Farbenindustrie Akt.-Ges. December 20, 1926.
282,453. Manufacture of new products primarily useful as pharmaceutical products. I. G. Farbenindustrie Akt.-Ges. December 20, 1926.
282,619. Method of producing soluble phosphates. Liljenroth, F. G. December 23, 1926.
282,626. Production of sulphonated oils and fats with a high content of organically combined sulphuric acid. Flesch, H. December 23, 1926.
282,629. Manufacture and production of vat dyestuffs. I. G. Farbenindustrie Akt.-Ges. December 23, 1926.
282,635. Production of artificial masses. I. G. Farbenindustrie Akt.-Ges. December 23, 1926.
282,658. Processes for carrying out exothermic chemical reactions under pressure and at a high temperature. Soc. L'Air Liquide, Soc. Anon. Pour L'Etude et L'Exploitation des Procedes G. Claude. December 24, 1926.
282,682. Process for the manufacture of azo dyestuffs which are insoluble in water. I. G. Farbenindustrie. Akt.-Ges. December 22, 1926.
282,683. Process for the manufacture of mono-azo dyestuffs. I. G. Farbenindustrie Akt.-Ges. December 23, 1926.
282,691. Recovery of valuable organic products from solid carbonaceous materials. I. G. Farbenindustrie Akt.-Ges. December 22, 1926.

Specifications Accepted with Date of Application

259,245. Crystallised arsenobenzenes, Manufacture of. A. Albert. October 3, 1925.
259,950. Condensation products of urea and derivatives and formaldehyde, Manufacture and production of. I.G. Farbenindustrie Akt.-Ges. October 16, 1925.
259,960. New pyridine derivatives, Process for the preparation of. Deutsche Gold-und Silber-Scheideanstalt vorm. Roessler. October 17, 1925.
259,973. Isonaphthyridine and its derivatives, Process for the production of. Deutsche Gold- und Silver-Scheideanstalt vorm. Roessler. October 17, 1925.
262,086. Dehydrogenation products, Process for the recovery of. I.G. Farbenindustrie Akt.-Ges. November 27, 1925.
268,299. Treating Latex and products thereof, Method of. Naugatuck Chemical Co. March 24, 1926.
272,211. Purification of impure solutions of caustic soda or the like on osmotic principles, Apparatus for. L. Cerini. June 1, 1926. Addition to 265,126.
273,291. Fertilisers, Process for the manufacture of. Rhenania Kunheim Verein Chemischer Fabriken Akt.-Ges. June 28, 1926. Addition to 235,860.
282,141. Gaseous fuels, Production of. Synthetic Ammonia and Nitrates, Ltd., and K. Gordon. September 11, 1926.
282,143. Quinoline derivatives, Process for preparing. O. Y. Imray (*I.G. Farbenindustrie Akt.-Ges.*). September 11, 1926.
282,151. New Azodyestuffs, Manufacture of. K. Carpmael and K. S. Carpmael (*I.G. Farbenindustrie Akt.-Ges.*). September 14, 1926.
282,165. Purification and softening of water. W. Paterson. September 17, 1926.
282,168. Chemical reactions, Apparatus for controlling. H. S. Hatfield and United Water Softeners, Ltd. September 18, 1926.
282,170. Effecting the chemical analysis of liquids and controlling chemical operations, Means for. H. S. Hatfield. September 20, 1926.
282,302. Purifying the reagents used in preparing persalts and other percompounds, Process of. Henkel and Cie, Ges. December 24, 1926.
282,306. Recovering lead or other valuable lead compounds from lead-sulphur compounds, Process of. A. L. Mond. (*Norddeutsche Chemische Fabrik in Harburg*). August 8, 1927.

Applications for Patents

Arnold, C., and Standard Oil Development Co. Manufacture of isopropyl acetate. 35,011. December 24.
Aspang, C. S., and Mahler, E. W. R. de. Production of hydrogenating catalysers. 34,625. December 21.
Baddiley, J., and British Dyestuffs Corporation, Ltd. Detergent, etc., compositions. 34,884. December 23.
Barry, V. M., and Lamberty, C. H. H. Distillation of carbonaceous materials. 34,365. December 19.
Bedford, C. S. Dyeing, etc., machines. 35,407. December 31.
British Cyanides Co., Ltd. Manufacture of artificial resins. 34,947. December 23.
Carpmael, K. S. [legal representative of Carpmael, W.] (I.G. Farbenindustrie Akt.-Ges.). Manufacture of chromium compounds 34,493. December 20.
Carpmael, A., and I. G. Farbenindustrie Akt.-Ges. Manufacture of azo-dyestuffs. 35,364. December 30.
Carpmael, A., and I. G. Farbenindustrie Akt.-Ges. Process for manufacture of oxygenated compounds. 35,464. December 31.
Carpmael, A., and I. G. Farbenindustrie Akt.-Ges. Manufacture of sulphur dyestuff pastes. 35,465. December 31.
Carpmael, A., and I. G. Farbenindustrie Akt.-Ges. Manufacture of condensation products of benzodiazine series. 35,466. December 31.
Clark, G. M., and Matro Ges. Manufacture of dry yeasts. 35,036. December 24.
Clark, G. M. Manufacture of therapeutically-active iron preparation. 35,037. December 24.
Classen, P. A. Process for removing hydrochloric acid from sugar solutions, etc. 35,451. December 31.
Erba Akt.-Ges. Manufacture of highly sulphonated oils, etc. 35,388. December 30. (Germany, November 22.)
Geigy Akt.-Ges., J. R. Manufacture of alkylisorosinduline-sulphonic acids. 35,149. December 28. (Germany, December 27, 1926.)
Gibson, W., and Payman, J. B. Manufacture of esters. 34,662. December 21.
Grace, C. J. Means of producing emulsion of colloidal sulphur in water. 34,600. December 21.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Preparation of latex products. 34,327. December 19.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of acidyl derivatives of etherified alcohols. 34,328. December 19.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of products from sorbitol. 34,329. December 19.
I.G. Farbenindustrie Akt.-Ges. and Imray, O. Y. Manufacture of naphthol ether carboxyamides, etc. 34,349. December 19.
I.G. Farbenindustrie Akt.-Ges. Manufacture of chromium compounds. 34,493. December 20.
I.G. Farbenindustrie Akt.-Ges. and Imray, O. Y. Process for hydrogenating open chains containing nitrogen in unsaturated unions. 34,512. December 20.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Catalytic oxidation of organic compounds. 34,622. December 21.
I.G. Farbenindustrie Akt.-Ges. and Johnson J. Y. Treatment of montan wax. 34,725. December 22.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of albumin. 34,726. December 22.
I.G. Farbenindustrie Akt.-Ges. Manufacture of 2-aminonaphthalene-3-carboxylic acid, etc. 34,353. December 19. (Germany, December 17, 1926.)
I.G. Farbenindustrie Akt.-Ges. Manufacture of dyestuffs. 34,373. December 19. (Germany, December 20, 1926.)
I.G. Farbenindustrie Akt.-Ges. Manufacture of pharmaceutical products. 34,374. December 19. (Germany, December 20, 1926.)
I.G. Farbenindustrie Akt.-Ges. Production of aluminium by fusion electrolysis. 34,395. December 19. (Germany, January 21.)

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity strength, and locality.

ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages extra.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 2s. 2d. to 2s. 7d. per gall.; pyridinised industrial, 2s. 4d. to 2s. 9d. per gall.; mineralised, 3s. 3d. to 3s. 7d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity as from January 1, 1928.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3¾d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—7⅛d. to 7¾d. per lb. Crude 60's, 2s. 5d. per gall. prompt; lower for forward delivery.

ACID CRESYLIC 99/100.—2s. 11d. to 3s. per gall. 97/99.— 2s. 4d. to 2s. 5½d. per gall. Pale, 95%, 2s. 3d. to 2s. 4d. per gall. Dark, 95%, 2s. 1d. to 2s. 2d.

ANTHRACENE.—A quality, 2½d. per unit. 40%, £5 per ton.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7¾d. to 8d. per gall.

BENZOLE.—Crude 65's, 9¼d. to 9¾d. per gall., ex works in tank wagons. Standard Motor, 1s. 1½d. to 1s. 2½d. per gall., ex works in tank wagons. Pure, 1s. 5d. to 1s. 7d. per gall., ex works in tank wagons.

TOLUOLE.—90%, 1s. 4d. to 1s. 8d. per gall. Firm. Pure, 1s. 6d to 1s. 11d. per gall.

XYLOL.—1s. 3d. to 1s. 9d. per gall. Pure, 1s. 9d. per gall.

CREOSOTE.—Cresylic, 20/24%, 10d. to 11d. per gall.; middle oil, 8d. to 9d. per gall. Heavy, 8¾d. to 9d. per gall. Standard specification, 7¼d. to 7¾d. ex works. Salty, 7d. per gall., less 1½%.

NAPHTHA.—Crude, 9d. to 10d. per gall. Solvent 90/160, 9½d. to 10d. per gall. Solvent 95/160, 1s. 3d. to 1s. 4d. per gall. Solvent 90/190, 9½d. to 1s. 3d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £5 per ton. Whizzed or hot pressed, £8 per ton.

NAPHTHALENE.—Crystals, £13 to £13 10s. per ton. Quiet. Flaked, £14 to £15 per ton, according to districts.

PITCH.—Medium soft, 85s. to 90s. per ton, f.o.b., according to district. Market firm.

PYRIDINE.—90/140, 5s. 6d. to 6s. 6d. per gall. 90/180, 3s. 6d. to 5s. per gall. Heavy, 3s. to 3s. 6d. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID BENZOIC.—1s. 8½d. per lb.

ACID GAMMA.—4s. 6d. per lb.

ACID H.—3s. per lb.

ACID NAPHTHIONIC.—1s. 6d. per lb.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb.

ACID SULPHANILIC.—8½d. per lb.

ANILINE OIL.—8d. per lb. naked at works.

ANILINE SALTS.—8d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—5½d. per lb.

m-CRESOL 98/100%.—2s. 3d. to 2s. 5d. per lb.

p-CRESOL 32/34° C.—2s. 3d. to 2s. 5d. per lb.

DICHLORANILINE.—1s. 10d. per lb.

DIMETHYLANILINE.—1s. 11d. per lb.

DINITROBENZENE.—8½d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 6d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—10d. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb.

B-NAPHTHYLAMINE.—3s. per lb.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 8d. per lb.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb.

R. SALT.—2s. 2d. per lb.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

o-TOLUIDINE.—8½d. per lb.

p-TOLUIDINE.—2s. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.

N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £10 5s. per ton. Good demand. Grey, £14 10s. to £15 per ton. Liquor, 9d. per gall.

CHARCOAL.—£6 to £9 per ton, according to grade and locality. Foreign competition severe.

IRON LIQUOR.—1s. 3d. per gall, 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10d. per gall.

WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 11d. to 4s. 3d. per gall. Solvent, 4s. 3d. per gall.

WOOD TAR.—£4 to £5 per ton.

BROWN SUGAR OF LEAD.—£40 15s. per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 6d. to 2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£45 to £50 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 1d. per lb.

DIPHENYLGUANIDINE.—3d. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5¾d. to 6¾d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPHONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—6s. to 6s. 3d. per lb.

ZINC SULPHIDE.—1s. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 3½d. to 2s. 5d. per lb.

ACID, BENZOIC, B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. to 1s. 3d. per oz., according to quantity.
ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—1s. 6½d. to 1s. 7d. per lb., less 5%.
ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.
ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.
ACID, SALICYLIC, B.P. PULV.—1s. 2½d. to 1s. 3½d. per lb.; Technical.—11½d. to 11¾d. per lb.
ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.
ACID, TARTARIC.—1s. 3¼d. per lb., less 5%.
ACETANILIDE.—1s. 6d. to 1s. 9d. per lb. for quantities.
AMIDOL.—7s. 6d. to 9s. per lb., d/d.
AMIDOPYRIN.—8s. to 8s. 3d. per lb.
AMMONIUM BENZOATE.—3s. to 3s. 3d. per lb., according to quantity.
AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.
ATROPINE SULPHATE.—9s. per oz.
BARBITONE.—5s. 9d. to 6s. per lb.
BENZONAPHTHOL.—3s. 3d. per lb. spot.
BISMUTH CARBONATE.—10s. 4d. to 10s. 7d. per lb.
BISMUTH CITRATE.—9s. 10d. to 10s. 1d. per lb.
BISMUTH SALICYLATE.—8s. 10d. to 10s. 1d. per lb.
BISMUTH SUBNITRATE.—8s. 4d. to 8s. 7d. per lb.
BISMUTH NITRATE.—6s. 1d. to 6s. 4d. per lb.
BISMUTH OXIDE.—13s. 10d. to 14s. 1d. per lb.
BISMUTH SUBCHLORIDE.—13s. 10d. to 14s. 1d. per lb.
BISMUTH SUBGALLATE.—8s. 1d. to 8s. 4d. per lb. Extra and reduced prices for smaller and larger quantities respectively; Liquor Bismuthi et Ammon, Cit. B.P. in W. Qts. 1s. 1d. per lb.; 12 W. Qts. 1s. per lb.; 36 W. Qts., 11½d. per lb.
BORAX B.P.—Crystal, 25s. per cwt.; powder, 26s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
BROMIDES.—Ammonium, 1s. 11d. to 2s. 1d. per lb.; potassium, 1s. 7¾d. to 1s. 9¾d. per lb.; sodium, 1s. 10d. to 2s. per lb.; granulated, ½d. per lb. less; all spot. Large quantities at lower rates.
CALCIUM LACTATE.—1s. 2¼d. to 1s. 3½d. per lb.
CAMPHOR.—Refined flowers, 2s. 11d. to 3s. 1d. per lb., according to quantity; also special contract prices.
CHLORAL HYDRATE.—3s. 2d. to 3s. 4d. per lb.
CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.
CREOSOTE CARBONATE.—6s. per lb.
ETHERS.—S.G. ·730—1s. 1d. to 1s. 2d. per lb., according to quantity; other gravities at proportionate prices.
FORMALDEHYDE.—£39 per ton, in barrels ex wharf.
GUAIACOL CARBONATE.—4s. 9d. to 5s. per lb.
HEXAMINE.—2s. 3d. to 2s. 6d. per lb.
HOMATROPINE HYDROBROMIDE.—30s. per oz.
HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.
HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 3s. to 4s. per gall.
HYDROQUINONE.—3s. 10d. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.
IRON AMMONIUM CITRATE.—B.P., 2s. 1d. to 2s. 4d. per lb. Green, 2s. 4d. to 2s. 9d. per lb.; U.S.P., 2s. 2d. to 2s. 5d. per lb.
IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.
MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.
MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb., in 1 cwt. lots.
MENTHOL.—A.B.R. recrystallised B.P., 15s. 6d. per lb. net for January delivery; Synthetic detached crystals, 9s. to 12s. 6d. per lb., according to quantity; Liquid (95%), 11s. 3d. per lb.
MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, 7s. 6d. to 7s. 7d. per lb., levig., 7s. to 7s. 1d. per lb.; Corrosive Sublimate, Lump, 5s. 9d. to 5s. 10d. per lb., Powder, 5s. 2d. to 5s. 3d. per lb.; White Precipitate, Lump, 5s. 11d. to 6s. per lb., Powder, 6s. to 6s. 1d. per lb., Extra Fine, 6s. 1d. to 6s. 2d. per lb.; Calomel, 6s. 4d. to 6s. 5d. per lb.; Yellow Oxide, 6s. 10d. to 6s. 11d. per lb.; Persulph., B.P.C., 6s. 1d. to 6s. 2d. per lb.; Sulph. nig., 5s. 10s. to 5s. 11d. per lb. Special prices for larger quantities.
METHYL SALICYLATE.—1s. 5d. to 1s. 9d. per lb.
METHYL SULPHONAL.—9s. to 9s. 3d. per lb.
METOL.—9s. to 11s. 6d. per lb. British make.
PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.
PARALDEHYDE.—1s. 1d. to 1s. 4d. per lb.
PHENACETIN.—2s. 6d. to 2s. 9d. per lb.
PHENAZONE.—4s. to 4s. 3d. per lb.
PHENOLPHTHALEIN.—6s. 6d. to 6s. 9d. per lb.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—96s. per cwt., less 2½ per cent.
POTASSIUM CITRATE.—B.P.C., 1911, 1s. 8d. to 1s. 11d. per lb.; U.S.P., 1s. 11d. to 2s. 2d. per lb.
POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.
POTASSIUM IODIDE.—16s. 8d. to 17s. 5d. per lb., according to quantity.
POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.
POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.
QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.
RESORCIN.—2s. 10d. to 3s. per lb., spot.
SACCHARIN.—55s. per lb.; in quantity lower.
SALOL.—2s. 4d. per lb.
SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.
SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923—2s. to 2s. 2d. per lb. for 1-cwt. lots. U.S.P., 1s. 11d. to 2s. 2d. per lb., according to quantity.
SODIUM FERROCYANIDE.—4d. per lb., carriage paid.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—90s. to 95s. per cwt. Crystals, 5s. per cwt. extra.
SODIUM SALICYLATE.—Powder, 1s. 7d. to 1s. 9d. per lb. Crystal, 1s. 8d. to 1s. 10d. per lb.
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d per lb.
SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.
SULPHONAL.—6s. 9d. to 7s. per lb.
TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 3d. per lb.
THYMOL.—Puriss., 10s. to 10s. 3d. per lb., according to quantity. Firmer. Natural, 14s. 3d. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.
AUBEPINE (EX ANETHOL).—11s. per lb.
AMYL ACETATE.—2s. per lb.
AMYL BUTYRATE.—5s. 3d. per lb.
AMYL SALICYLATE.—3s. per lb.
ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.
BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.
BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.
BENZYL BENZOATE.—2s. 6d. per lb.
CINNAMIC ALDEHYDE NATURAL.—15s. 9d. per lb.
COUMARIN.—9s. 6d. per lb.
CITRONELLOL.—13s. 3d. per lb.
CITRAL.—8s. 3d. per lb.
ETHYL CINNAMATE.—6s. per lb.
ETHYL PETHALATE.—3s. per lb.
EUGENOL.—8s. 3d. per lb.
GERANIOL (PALMAROSA).—17s. 9d. per lb.
GERANIOL.—6s. to 10s. per lb.
HELIOTROPINE.—4s. 9d. per lb.
ISO EUGENOL.—13s. per lb.
LINALOOL.—Ex Bois de Rose, 14s. per lb. Ex Shui Oil, 9s. 9d. per lb.
LINALYL ACETATE.—Ex Bois de Rose, 17s. 6d. per lb. Ex Shui Oil, 13s. 9d. per lb.
METHYL ANTHRANILATE.—8s. 6d. per lb.
METHYL BENZOATE.—4s. per lb.
MUSK KETONE.—35s. per lb.
MUSK XYLOL.—8s. per lb.
NEROLIN.—4s. 6d. per lb.
PHENYL ETHYL ACETATE.—12s. per lb.
PHENYL ETHYL ALCOHOL.—10s. 6d. per lb.
RHODINOL.—31s. 6d. per lb.
SAFROL.—1s. 6d. per lb.
TERPINEOL.—1s. 8d. per lb.
VANILLIN.—16s. 6d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 11s. per lb.
ANISE OIL.—2s. 9d. per lb.
BERGAMOT OIL.—26s. per lb.
BOURBON GERANIUM OIL.—13s. per lb.
CAMPHOR OIL.—9d. per lb.
CANANGA OIL, JAVA.—15s. 9d. per lb.
CINNAMON OIL LEAF.—6d. per oz.
CASSIA OIL, 80/85%.—7s. 3d. per lb.
CITRONELLA OIL.—Java, 1s. 9d. per lb., c.i.f. U.K. port for shipment over 1928. Ceylon, pure, 1s. 7d. per lb.
CLOVE OIL.—5s. per lb.
EUCALYPTUS OIL, AUSTRALIAN.—2s. 1d. per lb.
LAVENDER OIL.—Mont Blanc, 38/40%, Esters, 17s. per lb.
LEMON OIL.—8s. 6d. per lb.
LEMONGRASS OIL.—4s. 6d. per lb.
ORANGE OIL, SWEET.—11s. 3d. per lb.
OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 75s. per oz.
PALMA ROSA OIL.—10s. 3d. per lb.
PEPPERMINT OIL.—Wayne County, 15s. 9d. per lb.; Japanese, 8s. per lb.
PETITGRAIN OIL.—7s. 9d. per lb.
SANDALWOOD OIL.—Mysore, 26s. 6d. per lb.; 90/95%, 16s. 6d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, January 5, 1928.

TRADE has been quiet this week mainly owing to the New Year holidays in the northern areas, and therefore there has been little move in the market. Any business that has been done has been transacted at full figures and prices are firm with generally an upward tendency. Export trade has been fair.

General Chemicals

ACETONE.—Extremely firm at £64 per ton with a rising tendency. Stocks are light.

ACID ACETIC is very firm with also an upward tendency but price is nominally unchanged at £37 to £38 per ton for 80%.

ACID CITRIC is unchanged.

ACID FORMIC is still in good demand at round about £45 per ton.

ACID LACTIC is in good request at £43 per ton for 50%, by weight.

ACID OXALIC is firm and in good demand at £30 per ton.

ALUMINA SULPHATE demand is active and price continues very firm at £5 15s. to £5 17s. 6d. per ton.

AMMONIUM CHLORIDE is firmer at £19 10s. per ton with a fair demand.

BARIUM CHLORIDE unchanged at £8 to £9 per ton, according to quantity and position.

COPPER SULPHATE is firmer and the article is now standing at about £24 5s. per ton.

FORMALDEHYDE is in moderate request and the market is unchanged at £41 to £43 per ton.

LEAD ACETATE is extremely firm at £43 per ton for white and 10s. per ton less for brown.

LIME ACETATE is unchanged.

METHYL ACETONE.—The market is much more active and supplies are very scarce at £54 to £55 per ton.

POTASSIUM CHLORATE is unchanged.

POTASSIUM PERMANGANATE is quiet at 5d. per lb. with little business passing.

POTASSIUM PRUSSIATE is unchanged on the basis of £59 per ton. The tendency is higher.

SODIUM ACETATE is extremely firm at £19 15s. per ton with a good demand.

SODIUM BICHROMATE is unchanged.

SODIUM CHLORATE.—This material continues in short supply at about £28 per ton.

SODIUM NITRITE is firm at from £19 10s. to £20 per ton; demand better.

SODIUM PRUSSIATE is active at 4½d. per lb.

SODIUM SULPHIDE is unchanged.

ZINC SULPHATE is unchanged at £14 per ton.

Coal Tar Products

The market for coal tar products continues to be quiet, and there is little change to report in values.

90's BENZOL is quoted at about 1s. 3d. to 1s. 4d. per gallon, while the motor quality is quoted at 1s. 1d. to 1s. 1½d. per gallon.

PURE BENZOL is worth about 1s. 5½d. to 1s. 6½d. per gallon, on rails.

CREOSOTE OIL remains firm, at about 7½d. per gallon, on rails, in the North, and at about 8½d. per gallon in London.

CRESYLIC ACID is unchanged, and is quoted at about 2s. 1d. per gallon for the pale quality, 97/99%, while the dark, 95/97%, is quoted at about 1s. 10d. per gallon.

SOLVENT NAPHTHA is quoted at about 9d. per gallon, on rails.

HEAVY NAPHTHA is quoted at about 10d. per gallon.

NAPHTHALENES are steady, at about £6 15s. to £7 per ton for the 74/76 quality, and at about £8 to £8 15s. per ton for the 76/78 quality.

PITCH is unchanged and remains at about 85s. f.o.b., U.K. port.

Latest Oil Prices

LONDON January 4.—LINSEED OIL steady and 2s. 6d. per ton higher. Spot, ex mill, £28; January, £26 17s. 6d.; January-April, £27 2s. 6d.; May-August, £28 2s. 6d.; and September-December, £28 15s. RAPE OIL quiet. Crude extracted, £44; technical refined, £46, naked, ex wharf. COTTON OIL steady. Refined common edible, £42. Egyptian crude, £37 10s.; and deodorised, £44 per ton. TURPENTINE firm but inactive at 9d. per cwt. advance. American, spot, 39s. 9d.; and February-April, 40s. 9d.

HULL, January 4.—LINSEED OIL.—Spot, £27 10s.; January-April, £27 12s. 6d.; May-August, £28 2s. 6d. per ton, naked. COTTON OIL.—Bombay, crude, £31; Egyptian, crude (new), £35 15s.; edible, refined, £39 10s.; technical, £35 10s.; deodorised, £41 10s. per ton, naked. PALM KERNEL OIL.—Crushed, 5½ per cent., £39 10s. per ton, naked. GROUNDNUT OIL.—Crushed extracted, £46 10s.; deodorised, £50 10s. per ton. SOYA OIL.—Extracted and crushed, £33 10s.; deodorised, £37. RAPE OIL.—Crude extracted, £42 10s.; refined, £44 10s. per ton. TURPENTINE.—Spot, 42s. per cwt., net, cash terms, ex mill. CASTOR OIL and COD OIL unaltered.

Methylated Ethers: Price Reduction

MAY AND BAKER, LTD., advise reductions in the prices of methylated ethers in consequence of the lower price for methylated spirit. The present rates are now as follows:

ETHER METH.	IN W. QTS.	NOT LESS THAN 12 W. QTS.	IN DRUMS OR CARBOYS.	
s.g. .750	1/1½	1/1	1/0½	per lb.
s.g. .735	1/2	1/1½	1/1	,, ,,
s.g. .730	1/2	1/1½	1/1	,, ,,
s.g. .725	1/4	1/3½	1/3	,, ,,
s.g. .725	1/8½	1/8	1/7½	,, ,,
s.g. .720	1/5	1/4½	1/4	,, ,,
s.g. .717	1/11	1/10½	1/10	,, ,,
Ether Purif. .720 ex Meth. Spirit (Aether B.P. 1914)	2/3½	2/3	2/2½	,, ,,

Net prices. Usual terms. Special prices apply for quantities and contracts.

Calcium Cyanamide

A SATISFACTORY number of inquiries are already being received for this fertiliser (19% N.) for spring use. The January price to farmers for 4-ton lots is £8 16s. per ton, carriage paid to any railway station in Great Britain.

Nitrogen Products

Export.—The market on the Continent during the past week has been very quiet, probably owing to the holidays, but with the commencement of the New Year a better demand is expected. The prices still remain nominal at £9 12s. to £9 16s. per ton f.o.b. U.K. port in single bags.

Home.—The home demand continues very quiet. A few orders have been received for early delivery, but otherwise the demand continues featureless.

Nitrate of Soda.—The market remains steady at previous quotations.

South Wales By-Products

SOUTH Wales by-product activities have been practically at a standstill during the past week as a result of the holidays, and it is unlikely that there will be any real activity for another week or two. The call for pitch is very small, the product changing hands at from 83s. to 87s. 6d. per ton, f.o.b. Solvent and heavy naphthas have no call. Crude tar, which continues to sell at from 60s. to 65s. per ton, has a small demand to meet immediate requirements. Refined tars are steady, coke oven tar selling at 8½d. to 9d. per gallon, and gasworks tar at 7d. to 7¾d. per gallon, f.o.r. maker's works, and 10d. to 1s. per gallon delivered in barrels. Patent fuel and coke export continues slow, but there are strong hopes for an improvement this month. Patent fuel remains at from 22s. 6d. to 24s. per ton; coke (best foundry), 35s. to 37s. 6d. per ton, and other sorts from 27s. 6d. to 35s. per ton.

Society of Public Analysts: Forthcoming Meeting

THE next meeting of the Society of Public Analysts will be held on Wednesday, January 11, at the Institute of Chemistry, 30, Russell Square, London, W.C.1, at 8 p.m. The following papers will be read: "The Determination of small quantities of Benzoic and Cinnamic Acids, with some notes on the Colorimetric Determination of Salicylic Acid," by J. R. Nicholls, B.Sc., F.I.C.; "A Rapid Method of Determining Sulphur Dioxide" and four additional papers, by the preservatives determination committee of the chemists of the Manufacturing Confectioners' Alliance, Food Manufacturers' Federation.

Five candidates for admission to the Society will be balloted for. Arrangements have been made for members and their friends to dine together at St. James's Restaurant, 178, Piccadilly (opposite Burlington House), at 6.30 p.m.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, January 4, 1928.

BUSINESS in the heavy chemical market has naturally been somewhat interrupted during the past fortnight, but the tone of the market is still good and inquiry both for home and export business considerable. Apart from reductions in some alkali products which came into force at the beginning of the year, prices show little or no change.

Industrial Chemicals

ACETONE, B.G.S.—Quoted £59 to £62 per ton, ex store, according to quantity.

ACID, ACETIC, 98/100%.—Glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80%, pure, £37 10s. per ton, ex wharf; 80%, technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystals, granulated or small flakes, £30 per ton. Powdered, £32 per ton packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—Quoted price unchanged at 7¼d. per lb., f.o.b. U.K. ports, but in very little demand.

ACID CITRIC, B.P. CRYSTALS.—Quoted 1s. 6¾d. per lb., less 5%, ex wharf.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. 6d. per carboy. Dearsenicated quality, 4s. 6d. per carboy, ex works, full wagon loads.

ACID NITRIC, 80°.—Quoted £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—On offer from the Continent at 3¼d. per lb., ex wharf. Spot material quoted 3½d. per lb., ex store. In better demand.

ACID SULPHURIC.—£3 7s. 6d. per ton, ex works for 144° quality; £6 5s. per ton for 168° quality. Dearsenicated quality, 20s. per ton extra.

ACID TARTARIC, B.P. CRYSTALS.—Still in little demand, but price unchanged at 1s. 2½d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Spot material quoted £5 12s. 6d. per ton, ex store. On offer for early delivery at £5 5s. per ton, c.i.f. U.K. ports.

ALUM.—Lump potash quality quoted £8 5s. per ton, c.i.f. U.K. ports. Crystal meal, 10s. per ton less. Lump quality on spot offered at £9 per ton, ex store.

AMMONIA, ANHYDROUS.—Unchanged at about 9d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered £39 per ton, packed in 5-cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA, LIQUID, 880.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture unchanged at £23 to £24 per ton, ex station. Continental on offer at £19 15s. per ton, c.i.f. U.K. ports. Fine white crystals quoted £17 10s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Unchanged at about £19 17s. 6d. per ton, ex wharf, prompt despatch from mines. Spot material on offer at £20 15s. per ton, ex store.

BARIUM CARBONATE, 98/100%.—English material on offer at £7 5s. per ton, ex store. Continental quoted £7 per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Large white crystals quoted £6 17s. 6d. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—On offer at £6 per ton, ex wharf, packed in casks.

BORAX.—English manufacturers' prices unchanged as follows: Granulated, £19 10s. per ton; crystals, £20 per ton; powdered, £21 per ton. Odd parcels of granulated on offer from America at about £16 per ton, ex wharf.

CALCIUM CHLORIDE.—Solid material in large drums on offer at £4 10s. per ton, ex store. Continental quoted at about £3 10s. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or £4 12s. 6d. per ton, f.o.b. U.K. ports for export.

COPPER SULPHATE.—Continental material quoted £23 per ton, c.i.f. U.K. ports. British on offer at £24 per ton, ex store.

FORMALDEHYDE, 40%.—On offer at £37 5s. per ton, c.i.f. U.K. ports. Spot material quoted £39 per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material available at about £30 15s. per ton, ex store.

LEAD, WHITE.—Quoted £31 per ton, ex store.

LEAD ACETATE.—White crystals quoted £39 15s. per ton, c.i.f. U.K. ports; brown about £38 10s. per ton, c.i.f. U.K. ports. Spot material on offer at £42 15s. per ton, ex store, spot delivery.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store. In moderate demand.

POTASH CAUSTIC, 88/92%.—Solid quality quoted £28 15s. per ton, c.i.f. U.K. ports, minimum 15-ton lots. Under 15-ton lots, £29 10s. per ton. Liquid, £15 per ton, minimum 15-ton lots. Under 15-ton lots, £15 7s. 6d. per ton, c.i.f. U.K. ports.

POTASSIUM BICHROMATE.—4½d. per lb., delivered, minimum 4-ton lots. Under 4-ton lots, ½d. per lb. extra.

POTASSIUM CARBONATE, 96/98%.—Rather scarce for immediate delivery. Quoted £25 10s. per ton, ex wharf. Spot material about £26 10s. per ton, ex store.

POTASSIUM CHLORATE, 99/100%.—Offered from the Continent at £25 15s. per ton, c.i.f. U.K. ports, for powdered quality. Crystals, 30s. per ton more.

POTASSIUM NITRATE.—Offered at about £19 15s. per ton, c.i.f. U.K. ports. Spot material available at £20 15s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 6½d. per lb., ex store, spot delivery.

POTASSIUM PRUSSIATE (YELLOW).—Unchanged at about 6½d. per lb., ex store, spot delivery. Offered from the Continent at 6⅜d. per lb.

SODA CAUSTIC.—Powdered, 98/99%, £17 17s. 6d. per ton; solid, 76/77%, £14 10s. per ton, minimum 4-ton lots, carriage paid for contracts. Spot material 10s. per ton extra.

SODIUM ACETATE.—In good demand and in limited supply. Imported material now quoted £19 15s. per ton, ex store.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less. No change in price for this year.

SODIUM BICHROMATE.—Quoted 3d. per lb. delivered buyers' works, minimum 4-ton lots. Under 4 and over 2-ton lots 3 1/16d. per lb, under 2-ton lots 3⅛d. per lb.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, 27s. 6d. per ton extra; alkali, 58%, £8 10s. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4-ton lots.

SODIUM NITRITE, 100%.—Quoted £19 10s. per ton, ex store.

SODIUM PRUSSIATE (YELLOW).—In moderate demand and price unchanged at about 4¼d. per lb., ex store. Offered for prompt shipment from the Continent at 4⅛d. per lb., ex wharf.

SODIUM SULPHATE (SALT CAKE).—Price for home consumption, £3 7s. 6d. per ton, ex works.

SODIUM SULPHIDE.—Prices now as follows:—Solid, 60/62%, £9 per ton; broken, 60/62%, £10 per ton; crystals, 30/32%, £9 2s. 6d., delivered buyers' works on contract, minimum 4-ton lots. Special prices for home consumers. Spot material 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 15s. per ton; rock, £10 12s. 6d. per ton; floristella, £9 10s. per ton; ground American, £9 5s., ex store; prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports; 98/100%, solid, on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports. Powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental material quoted £11 15s. per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Intermediates

ALPHA NAPHTHYLAMINE.—1s. 3d. per lb. Some inquiries.

BETA NAPHTHOL.—10d. per lb. Some inquiries.

META XYLIDINE ACETATE.—2s. 6d. per lb. per 100%. Some inquiries.

BENZALDEHYDE.—2s. 3d. per lb. Some inquiries.

ORTHO TOLUIDINE.—7½d. per lb. Some inquiries.

New Year Calendars

THE Premier Filterpress Co., Ltd., of Finsbury Pavement House, have forwarded refills for 1928 for their very convenient framed desk calendar, showing the current month at a glance.

One of the most useful and attractive desk calendars and appointment keepers is issued by the *Newspaper World* in large cheque book form. Each page shows the calendar for the current month, six spaces for the current week's daily engagements, and provision for weekly memoranda. Novel in form, it has been carefully thought out and just meets the needs. Those who have received the sample calendar for the first three months of 1928 will certainly hope to welcome its successors in due course.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, January 5, 1928.

The markets made a valiant attempt on Tuesday to get back to normal after the holidays but, so far as the chemical market here was concerned, it was only partially successful. Actual business this week has been on rather quiet lines but a fair amount of inquiry is in circulation and it is probable that a bigger volume of trade will be put through within the next week or two. Meanwhile, taking the market as a whole, prices keep steady and there are few cases where weakness is to be observed.

Heavy Chemicals

A quiet business is being put through in the case of phosphate of soda and offers of this material still range from about £12 10s. to £12 15s. per ton. Buying interest in sulphide of sodium is of limited extent, with the commercial quality quoted at about £8 5s. per ton and the 60–65 per cent. concentrated solid at £9 15s. per ton. A moderate business is being put through in bichromate of soda at up to 3½d. per lb. Prussiate of soda is attracting a fair amount of attention and quotations for this material are firm at about 4⅜d. per lb. Chlorate of soda is also well held with current offers ranging from 2⅞d. to 3d. per lb. Nitrite of soda remains quite steady and meets with some inquiry at round £19 5s. per ton. With regard to caustic soda, this is in quiet demand at the moment but a good forward business has been transacted at the new prices. Alkali is in fair request about £6 10s. per ton. A fair business has also been put through in the case of saltcake, contract offers of which are at the much-reduced price of £2 12s. 6d. per ton. With regard to hyposulphite of soda this has not altered its position to any appreciable extent; the demand for this material is on the quiet side, with the photographic material on offer at in the neighbourhood of £16 per ton and the commercial quality at £9 10s. per ton.

Among the potash compounds permanganate is still a somewhat slow and easy section of the market, with the commercial grade quoted here at about 4¾d. per lb. and the B.P. material at down to 5¼d. Chlorate of potash, however, keeps firm and a fair amount of buying interest is being displayed, offers ranging from 2⅞d. to 3d. per lb. Yellow prussiate of potash is in a somewhat similar position, and quotations vary from 6¼d. to 6⅜d. per lb. With regard to bichromate of potash this is quiet at the moment, but prices are steady at round 4¼d. per lb. Caustic potash is fully maintained at round £30 per ton and a moderate business is being done. Carbonate of potash keeps firm and meets with a fair inquiry, with quotations at about £26 15s. per ton.

Arsenic is attracting little attention just now and although prices have not changed a great deal the tendency is easier at £18 per ton at the mines for white powdered, Cornish makes. The firmer feeling in sulphate of copper continues and a quietly steady trade in this product is being done at about £24 15s. per ton, f.o.b. The lead compounds are quiet but rather steadier at £41 and £39 10s. per ton for white and brown acetate, and from £37 10s. to £38 for nitrate. The acetates of lime are firm on comparative scarcity of prompt parcels, with grey quoted at £16 10s. per ton and brown at £10 10s.

Acids and Tar Products

Acetic acid continues to attract a fair amount of interest at steady prices, with the 80 per cent. commercial on offer at about £37 per ton and the glacial at £66. Both tartaric and citric acids are slow at the moment but values are about held in each case at 1s. 2⅝d. and 1s. 7d. per lb. respectively. Oxalic acid is also well maintained at round 3½d. per lb.

There is little of interest to report just now in the case of the tar products. Pitch is quiet at from £4 to £4 2s. 6d. per ton, f.o.b., but creosote oil keeps firm and in steady inquiry at round 8d. per gallon. Solvent naphtha is quiet and easy at round 11d. per gallon, with carbolic acid also inactive at 7¼d. per lb. for crystal and round 2s. 5d. per gallon for crude.

General Patart's Lecture Postponed

General Georges Patart finds it impossible to come to England to deliver his lecture on "Les nouveaux procédés industriels de synthèse directe des composés organiques," and the Council of the Institution of Chemical Engineers therefore announces that the public meeting to be held early this year will be postponed.

Company News

Goodlass, Wall and Co.—The directors announce an interim dividend of 5 per cent., less tax, on the ordinary shares.

Benn Brothers, Ltd.—The directors have declared an interim dividend of 6¼ per cent. on the ordinary shares, and 1s. 3d. on the deferred shares.

American Cyanamid Co.—A dividend of 1½ per cent. is announced on the preferred stock and 30 cents, plus 10 cents extra, on the common stock, payable on January 3.

Egyptian Salt and Soda Co., Ltd.—A dividend of 1s. 3d. per share (6¼ per cent.), less income tax, for the year ended August 31, 1927, will be paid on and after January 9, 1928.

British Sulphides Smelting Co.—A 5 per cent. dividend, less income tax, for the half-year ended December 31 was payable on the 10 per cent. cumulative preference shares on January 5.

Allen-Liversidge, Ltd.—The directors have declared an interim dividend on the ordinary shares for the six months ended October 31, 1927, at the rate of 10 per cent. per annum (5 per cent. actual), less tax.

Solignum, Ltd.—The board have declared a dividend at the rate of 8 per cent. on the preference shares for the period ending December 31, 1927, and an interim dividend at the rate of 20 per cent. per annum on the ordinary shares.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

Water-Softening Plant for Boiler-Feed Purposes.—The Town Council of Johannesburg is inviting tenders for the supply and delivery at the New Gas Works, Siding No. 1067, Cottesloe, of water-softening plant for boiler-feed purposes. Tenders will be received in Johannesburg up to noon on February 16, 1928. Local representation is essential. (Reference A.X. 5,721.)

Sulphate of Ammonia and Superphosphate; Coal Tar; Asphalt and Fuel Oil.—A firm in Odense desire to obtain the representation for Denmark of British manufacturers. (Reference No. 10.)

Dyestuffs for the Textile Industry.—An agent in Aix-la-Chapelle of considerable experience in the spinning trade desires to represent British manufactures on a commission basis for the district of Rhineland. (Reference No. 12.)

Soya Bean Oil.—A firm of commission agents in Salonica desire to be put in touch with British exporters. (Reference No. 14.)

Industrial Chemicals.—An old-established firm of agents in Bucarest desire to obtain the representation of British firms for sales in Roumania. (Reference No. 20.)

Merchandise Marks Inquiries

Glue, Glue Size, and Gelatine

The standing committee (general merchandise) appointed by the Board of Trade will hold their inquiry as to whether the following classes and descriptions of goods shall bear an indication of origin: (*a*) imported glue (including glue size) and gelatine, at 11.30 a.m., on Monday January 23. If necessary, a further meeting will be held on Tuesday, January 24. The inquiry will be held at the Board of Trade Offices, Great George Street, London, S.W.1. Communications should be addressed to the secretary, Mr. E. W. Reardon, at that address.

A Useful Range of Cranes

A recently issued folder of the Vaughan Crane Co., Ltd., of Openshaw, Manchester, illustrates a useful range of cranes and runways which will handle weights from 3 cwt. to 150 tons. Many types of cranes, electric or hand power, such as magnetic cranes, wall and pillar jib cranes, runway systems, trolley hoists, and under-hung jib cranes are available for use in practically every branch of industry.

Bigger and bigger demand for Hercules Rosin

LABORATORY TESTS have proved Hercules Wood Rosin to be equal, and even superior, to similar grades of Gum Rosin for nearly all commercial purposes.

Equal to similar grades of Gum Rosin and costs pounds less

Hercules American Wood Rosin is being more and more widely adopted for all commercial purposes. Its uniformity, its purity, and its low cost mean economy with increased efficiency.

SPECIFICATION.

Appearance	Clear, free from dirt and foreign matter
Colour	Ruby Red
Acid Number	150-155
Saponification	168-175
Unsaponifiable Matter	6%-10%
Melting Point	175-180° F.
Ash (approximately)	·02%

NOT A SUBSTITUTE.

Hercules Rosin is guaranteed pure American Rosin, free from foreign matter and always uniform.

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Hercules Rosin makes core binders of high tensile strength. Gives better sizing results in paper making. Proved satisfactory for dark soaps, linoleum, leather, etc. For dark varnishes its low acid number also recommends it.

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The recognised standard for Steam-Distilled Pine Oil. Always uniform. Tested accurately before shipment.

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Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

THOMPSON, Thomas, 33, Stevenson Street East, Accrington, chemical manufacturer. £18 2s. 2d. November 18.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

BONNARD CARBON MANUFACTURING CO., LTD., London, E.C. (M., 7/1/28.) Registered December 16, £12,000 debentures (filed under Section 93 (3) of the Companies (Consolidation) Act, 1908), present issue £10,000; general charge. *Nil. December 31, 1926.

HARTON DYEWORKS, LTD., London, N. (M., 7/1/28.) Registered December 20, Trust deed dated December 12, 1927, securing £20,000 1st debenture stock; charged on properties at Harton, Jarrow, etc., also general charge.

HOLROYD (J.) AND CO., LTD., Huddersfield, textile dyers, etc. (M., 7/1/28.) Registered December 2, Trust deed dated November 14, 1927, securing £10,000 debentures; charged on properties at Huddersfield, also general charge. *£7,900. December 1, 1926.

RANELAGH DYE WORKS, LTD., Merton. (M., 7/1/28.) Registered December 20, mortgage, to Bank; charged on land and buildings.

Satisfactions

ACME CHEMICAL CO., LTD., Tonbridge. (M.S., 7/1/28.) Satisfaction registered December 23, £300, registered January 10, 1925.

INTERNATIONAL CHEMICAL CO., LTD. (late INTERNATIONAL CHEMICAL LABORATORIES, LTD.), London, N. (M.S., 7/1/28.) Satisfaction registered December 20, £40,000, part of amount registered April 27, 1926.

London Gazette, &c.

Companies Winding Up Voluntarily

CUERDLEY CHEMICAL CO., LTD. (C.W.U.V., 7/1/28.) B. Silcock, 31, Bold Street, Warrington, Chartered Accountant, appointed as liquidator, December 20.

RATCLIFFE (BRADFORD), LTD. (C.W.U.V., 7/1/28.) H. V. Greenwood, 12, Northgate, Bradford, Chartered Accountant, appointed as liquidator, December 22. Meeting of creditors at the Talbot Hotel, Kirkgate, Bradford, at 12 noon, January 12. Creditors' claims by January 31.

VAR OIL CO., LTD. (C.W.U.V., 7/1/28.) By special resolution, December 6, confirmed December 21, J. P. B. Webster appointed as liquidator. Meeting of creditors at Adelaide House, King William Street, London, on January 10, at 11 a.m.

Application for Discharge

PICKLES, Robert Henry, Prussiate Works (also known as Manganese Mills), Droylsden, Manchester, trading as R. H. PICKLES AND CO., chemical manufacturer. (A.F.D., 7/1/28.) Hearing, January 27, 11.15 a.m., Town Hall, Ashton-under-Lyne.

Partnership Dissolved

ANDREW J. KIRKPATRICK AND CO. (John Robertson LAUDER and Duncan Turner KIRKPATRICK), chemical merchants, 179, West George Street, Glasgow, by mutual consent at December 31, 1927. J. R. Lauder will continue business under the firm name of Kirkpatrick and Lauder at the same address.

Receivership

LISSON MANUFACTURING AND TRADING CO., LTD. (R., 7/1/28.) H. E. Fern, of 70, Finsbury Pavement, E.C.2, ceased to act as receiver or manager on December 13, 1927.

New Companies Registered

CELLOPHANE CO., LTD. Registered December 30. Nom. capital, £10,000 in £1 shares. Manufacturers, importers and merchants of films, sheets and plates called and known as "Cellophane," and to acquire trade mark No. 341,636 relating thereto. A director: Sir Thomas Taylor, Kt., The Beeches, Upton, Manchester.

ESSEX FIRE EXTINGUISHER CO., LTD., 20 and 21, Essex Street, Strand, London, W.C.2. Registered December 20. Nom. capital, £20,000 in 20,000 founders' shares of 1s. each and 19,000 ordinary shares of £1 each. To acquire from W. M. Hutter the purchasers' rights and obligations under an agreement entered into by him on behalf of the company with Frank Wright and Partners, Ltd., F. C. Wright, H. L. Mossley, and C. F. B. Marshall for the purchase of the patent rights and a secret process for the manufacture of a substance for extinguishing fire, to adopt agreements with H. L. Mossley and W. M. Hunter, and to carry on the business of engineers, chemists, druggists, etc. Directors: W. M. Hutter, "Findon," H. L. Mossley.

JOHN GADD (COLOUR AND CHEMICAL AGENCIES), LTD., 126, Bishopsgate, London, E.C.2. Registered December 28. Nom. capital, £2,000 in £1 shares. Agents, factors, manufacturers, importers, exporters, storekeepers, and dealers in dyes, dyestuffs, colours, oil or water paints, varnishes, distemper, enamels, lead products and compounds, chemicals, spirits, oils, minerals, drugs, oil, coal and mineral products and compounds, gases and mineral and other ores; to manufacture and deal in the special colouring compound known as "Tylite" and a special chemical compound known as "Karspray," etc.

MEASURING MACHINES, LTD., Roxburghe House, 273-287, Regent Street, London, W.1. Registered December 20. Nom. capital, £100 in 1s. shares. Manufacturers and distributors of all types of measuring machines, analytical and manufacturing chemists, wholesale druggists, drug grinders, metallurgists, manufacturers of pharmaceutical, medicinal and chemical preparations, etc. Directors: R. D. Scoular and F. C. Mallett.

NITRO-CELLULOSE EXPLOSIVES CO., LTD., Watergate House, 15, York Buildings, Adelphi, London, W.C.2. Registered January 2. Nom. capital, £250 in £1 shares. Manufacturers of gunpowder (sporting or military), nitro-cellulose, nitro-glycerine, dynamite, guncotton, blasting powder and explosives generally. A subscriber: Major Sir A. Cooper-Key, C.B.

Institution of Chemical Engineers

THE sixth annual corporate meeting of the Institution of Chemical Engineers will be held in London on Friday, March 9. The following have accepted nomination by the Council for the ballot for vacancies about to occur in the honorary offices, and among ordinary members of the Council: president, Sir Alexander Gibb; vice-presidents, Mr. J. A. Reavell, Mr. W. A. S. Calder; hon. treasurer, Mr. F. H. Rogers. hon. secretary, Professor J. W. Hinchley; ordinary members of Council, Mr. B. Heastie, Dr. E. W. Smith, Mr. H. Talbot, Mr. S. G. M. Ure, Mr. A. L. Booth, and Dr. B. Moore. Among new associate members elected in the last quarter of 1927 is included Dr. Hunter, of the Battersea Polytechnic. The annual dinner of the Institution will also be held on March 9.